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CONTROLLING THE RISKS OF GOVERNMENT-SPONSORED ENTERPRISES

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NOTES

Unless otherwise indicated, all years referred to in this report are calendar years.

Details in the text and tables of this report may not add to totals because of rounding.

PREFACE

This report satisfies the requirements of section 13501(c) of the Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508). That statute directs the Congressional Budget Office (CBO) to prepare a study on government-sponsored enterprises (GSEs). The law specifies that the study include "an analysis of the financial risks each GSE assumes, how Congress may improve its understanding of those risks, the supervision and regulation of GSEs' risk management, the financial exposure of the Federal Government posed by GSEs, and the effects of GSE activities on Treasury borrowing," as well as "an analysis of alternative models for oversight of GSEs and of the costs and benefits of each alternative model to the Government and to the markets and beneficiaries served by GSEs." In keeping with CBO's mandate to provide nonpartisan analysis, the report includes no recommendations.

Robin Seiler of the Budget Process Unit coordinated the report and wrote Chapters I, II, and IV, under the supervision of Marvin Phaup, James L. Blum, and Robert Hartman. Chapter III was written by David D. Trechter, formerly of CBO's Natural Resources and Commerce Division. Douglas Hamilton of the Fiscal Analysis Division prepared Chapter V. Marvin Phaup and Susan Borghard of the Budget Process Unit wrote Chapter VI. Joyce Manchester of the Fiscal Analysis Division made a major contribution to Chapter I. Research assistance was provided by Susan Borghard, Dan Covitz, Nicholas Dugan, Susan Postle, Thomas Steinbach, and Patricia Wahl.

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SUMMARY

Government-sponsored enterprises (GSEs) are financial institutions chartered by the federal government to achieve the public purposes of facilitating the flow of funds to agriculture, housing, and higher education. Today, there are five enterprises: the Farm Credit System, the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac), the Federal Home Loan Bank (FHLB) System, and the Student Loan Marketing Association (Sallie Mae). These institutions achieve their public purposes by borrowing on the strength of an implicit federal guarantee. Investors in their obligations infer this guarantee from the GSEs' special benefits under federal law, the exemption of their obligations from the normal protections afforded to investors, Congressional support for the achievement of their public purposes, and the huge volume of their outstanding obligations, which totaled over $980 billion at the end of 1990.

Achieving public purposes by providing financial services exposes each GSE to risk. Any financial institution's overall exposure to risk is a function of its exposure to credit risk, interest rate risk, management and operations risks, and business risk. The distribution of the firm's overall risk between owners and creditors depends on how much of its assets is financed with equity. The government can allow a GSE's owners and management considerable discretion in determining the enterprise's exposure to each type of risk and the distribution of its overall risk. The implicit federal guarantee of GSE obligations transfers to the government a large portion of the risk that creditors normally bear. Federal risk bearing conveys an implicit subsidy and creates a permanent potential for federal losses. The government's exposure to a GSE will be quite low, however, if the enterprise is exposed to low levels of risk and is highly capitalized, and if the government has the ability to prevent large increases in risk and declines in capitalization.

The federal government can use two tools to limit the risks taken by each GSE to the minimum level necessary to achieve its public purposes. First, the government can restrict by statute the types of loans a

GSE can finance and require it to shed some of the credit risk of the assets and take a minimum amount of interest rate risk. Second, a federal agency can be empowered to supervise the activities of the enterprise to ensure that its operations are safe and sound, and to regulate its programs to assure that it achieves its public purposes.

The government can also require the owners and creditors of a GSE to bear a significant portion of the enterprise's overall risk. An enterprise's capital--stockholders' equity plus any liabilities on which payments can and will be interrupted as a condition of federal assistance--can protect the government both prospectively and retrospectively. Prospectively, capital can give a GSE an incentive to consider a wide range of possible outcomes, thereby limiting its incentive to ignore the potential costs to the government of bearing excessive risks. Retrospectively, capital is the deductible on the government's implicit guarantee of the enterprise's obligations.

This Congressional Budget Office (CBO) report analyzes how the five GSEs achieve their public purposes and assesses the financial exposure to the government arising from their activities. CBO has concluded that two of the GSEs--the FHLBs and Sallie Mae--currently pose a minimal risk of loss to the federal government. The two largest enterprises--Fannie Mae and Freddie Mac--are reasonably well capitalized relative to, and pose a low level of risk of loss to the government from, their exposure to credit risk and interest rate risk. The Farm Credit System's financial condition and overall risk have improved substantially since the government last provided assistance in 1987, but the system remains quite vulnerable and continues to expose the government to more risk than any other enterprise. CBO has not assessed the exposure to management and operations risks of any of the GSEs, however, and therefore cannot offer definitive conclusions about their overall exposure to risk or the adequacy of their capital.

The report also examines federal supervision of the GSEs and regulation of their programs, as well as strategies and policies that would enable the government to control its exposure to risk more effectively. CBO has concluded that federal supervision currently cannot ensure that Fannie Mae, Freddie Mac, and Sallie Mae will not increase their exposure to risks or lower their capitalization in the future. Federal supervision of the FHLB system and the Farm Credit System generally is adequate to protect the government. CBO's analysis raises the questions, however, of whether the government should take steps to assure the future viability of the FHLBs and reduce the near-term vulnerability of the Farm Credit System.

The report presents the conceptual framework that CBO has adopted to understand federal supervision and regulation of GSEs. The framework is used to analyze current supervision and regulation of each of the enterprises and to develop strategies and options for reform.

FEDERAL SUPERVISION OF GSEs

Governments supervise the safety and soundness of many types of financial institutions. Federal supervision of GSEs most closely resembles the supervision of depository institutions. In both cases the government is protecting itself as the ultimate guarantor of the liabilities of the financial institutions. In fact, the Farm Credit Administration, which supervises the several hundred institutions of the Farm Credit System, has statutory authority very similar to that of the federal bank and thrift regulators. The other four GSEs differ from depository institutions in many important ways, however, and federal supervision of them need not follow the regulation of depository institutions in every respect.

CBO has identified several ways to adapt the bank and thrift model of supervision to GSEs. These approaches include tailoring the statutory authority of supervisory agencies to reflect the attributes of GSEs, obtaining private assessments of the government's exposure to risk, centralizing supervision and regulation of the enterprises, and imposing federal risk-based or minimum capital requirements on them.

Adapting Supervisory Authority to the Unique Characteristics of Some GSEs

One strategy would provide a supervisory agency or agencies with statutory authority that was tailored to the unique characteristics of Fannie Mae, Freddie Mac, Sallie Mae, and perhaps the FHLB system. For example, a supervisory agency could be required to monitor intensively the internal plans of the first three GSEs, which have publicly traded stock that subjects them to some market discipline, and to sound an early warning of planned increases in risk. The agency could also be allowed to request that the President remove the board of directors of an enterprise that was planning excessive increases in risk or had begun to experience significant losses. Alternatively, an agency could be required to streamline the regulatory reporting and disclosure and the federal examinations of a GSE if it found that the enterprise posed little risk to the government. A streamlined process would allow federal examinations to focus on evaluating management systems, the quality of financial models and stress tests, and the accuracy of the data used to run them. The Congress could also use statutory language or legislative history to limit the ability of the agency to misuse its enforcement powers and to enable the enterprise to anticipate to some extent how they would be used. Finally, a supervisory agency could be required to appoint a conservator to manage the affairs of an ailing GSE and to prepare a legislative plan to recapitalize or otherwise reduce the risk of the enterprise.

Tailoring the statutory authority of the agency or agencies that supervised Fannie Mae, Freddie Mac, Sallie Mae, and perhaps the FHLBs in these ways would make federal monitoring less burdensome than supervision of banks and thrifts and would minimize the possibility of unnecessary interference in their operations. To varying degress, the adaptations would run some risk that the supervisory agencies would have difficulty detecting changes in the enterprises' risks and minimizing the government's exposure to those risks.

Obtaining Private Assessments of the Government's Exposure to Risk

Another strategy for oversight would rely on private assessments of the government's exposure to the risks of each GSE. Private risk assessments could reduce the possibility that a supervisory agency would allow an enterprise to take excessive risks, neglect to report losses or noncompliance with federal capital requirements, or take little or no action if the enterprise was in trouble. One or more of three possible approaches could be taken. First, a supervisory agency could be required to report regularly on its quantitative assessments of a GSE's exposure to credit risk and interest rate risk, and on the market values of its assets and liabilities, where available. The enterprise would be required to make available simultaneously the empirical data on which the supervisory agency had based its findings. Second, the government could hire private credit-rating agencies to rate the government's exposure to the risk of each GSE. Finally, if an enterprise was adequately capitalized, it could be required to issue subordinated debt that did not carry an implicit federal guarantee. Variations in the market value of that debt could indicate investors' perceptions of a GSE's risks.

Each of these sources of information could provide some private-sector discipline of the federal supervisory process. There would be costs to obtaining the assessments, however. Also, it is doubtful that private parties could be as well informed as a properly motivated supervisory agency that regularly examined a GSE, learned its techniques for measuring and managing risk, and developed its own stress tests. Private assessments could still be valuable if there were significant concerns about whether the supervisory agency would stay well informed, would publicize problems quickly, and would act to protect the government from excessive risk or to minimize losses.

Centralizing Supervision and Regulation of GSEs

CBO has identified two options that would reform supervision of the safety and soundness of GSEs by consolidating responsibilities for several enterprises in a single federal agency. One option would be to centralize all responsibility in a new federal agency with an independent board. This agency would have greater supervisory responsibility, would be accountable to a broader range of interests, and could be more visible than are the existing agencies that supervise GSEs. These factors probably would reduce the possibility that one or more of the enterprises could dominate the decisions of, or capture, the agency's board. Such an agency, however, might not simultaneously develop sufficient expertise in housing, higher education, and agriculture to supervise all the GSEs effectively. A lack of expertise could lead to adopting standardized monitoring and capital requirements that did not account for the differences among the enterprises.

A less far-reaching change would move supervision and program regulation of Fannie Mae and Freddie Mac from the Department of Housing and Urban Development to the Federal Housing Finance Board (FHFB), which supervises the FHLB system. The board might be able to develop more extensive expertise in housing finance than a centralized supervisor of all GSEs, but it would have to take into account the significant differences in the ownership, activities, and tax status of the three enterprises. The Congress probably would want to distinguish carefully between the FHFB's statutory authority over the FHLBs and its authority over Fannie Mae and Freddie Mac. The board would also have to develop expertise in issues that are unique to the latter two enterprises.

Issues in Setting Federal Capital Requirements for GSEs

The government has imposed capital requirements that vary with risk only on the member institutions of the Farm Credit System. Well-designed, risk-based standards could give the management of the other GSEs an incentive to limit the government's exposure to risk. In a streamlined supervisory process, risk-based requirements could incorporate the use of sophisticated financial models and stress tests to assess exposure to credit risk and interest rate risk.

The Congress might also want to establish a statutory minimum capital requirement to protect the government against a GSE's exposure to management and operations risks, which cannot be measured with precision, and against errors in judgment in setting risk-based capital standards. Responsibility to establish a minimum standard could also be delegated to a supervisory agency to prevent a statutory requirement from becoming a ceiling on enterprise capital.

Finally, Fannie Mae, Freddie Mac, Sallie Mae, or the FHLBs could be allowed to reach a "safe harbor" from federal capital requirements if two credit-rating agencies gave them an acceptably high rating. This option could create the possibility that a supervisory agency would be unable to act even if it discerned risks that the rating agencies had not uncovered. This concern could be addressed by requiring the agency to conduct federal examinations to assess exposure to management and operations risks and giving it authority to correct deficiencies, or by requiring very high ratings.

FARM CREDIT SYSTEM

The Farm Credit System (FCS) has several attributes that make it unique among the GSEs. First, in contrast to the other enterprises, which only serve financial institutions, most of the institutions in the system make loans directly to individual borrowers. Second, the FCS is the only GSE that is supervised by an agency with powers equivalent to those of the bank regulatory agencies, is subject to minimum risk-based capital standards, and is financing a federal insurance fund. Finally, the FCS is much more dependent on the financial well-being of a single sector of the economy--agriculture-- than are the other GSEs.

The FCS has recently been through a period of wrenching financial difficulties and, largely in response to legislation providing federal financial assistance, significant and continuing institutional change. CBO's analysis of the system suggests that the institutional changes made to date have greatly reduced the risk that the FCS poses to the federal government, but that portions of the system remain in weak financial condition. The weaker Farm Credit Banks could seriously threaten the financial integrity of the entire system if the farm economy were to suffer a serious downturn during the next few years. The likelihood of such a downturn is not high, in CBO's view. Nevertheless, the FCS's financial condition will bear close scrutiny during the next three to five years.

Activities and Recent Legislation

The FCS is organized as a multitiered, federated cooperative with about 275 member institutions in 12 districts. Like all cooperatives, each institution is owned and controlled by its member/borrowers. The government created the initial components of the system to make long-term loans for agricultural real estate. FCS lending later expanded to include production credit, lending to agriculturally oriented and rural cooperatives, and rural housing loans.

The Agricultural Credit Act of 1987, which provided federal financial assistance to the FCS, also significantly changed the system's institutional structure. The statute provided for some consolidation of the FCS: the district banks that made short- and long-term loans were merged, similar merger authority was given to local associations that make short- and long-term loans, and the system was urged to explore the possibility of reducing the number of districts through mergers. The statutory authority of the Farm Credit Administration (FCA), which supervises the FCS, was strengthened and clarified. The legislation also established the Financial Assistance Corporation (FAC) to provide up to $4 billion in financial assistance to the system by late 1992, to be financed with debt backed by an explicit federal guarantee. The Farm Credit System Insurance Corporation, which is a federal agency, was created to collect premiums from member institutions and build up a fund that would be available, beginning in 1993, to assure the timely repayment of borrowings by the system. Finally, the statute created the Federal Agricultural Mortgage Corporation (Farmer Mac) to increase agricultural lenders' access to capital markets by guaranteeing securities backed by loans for agricultural real estate and rural housing. Farmer Mac was also recently given authority to issue and guarantee securities backed by loans guaranteed by the Farmers Home Administration (FmHA).

Risks, Capitalization, and Federal Supervision

Since the mid-1980s, the FCS has improved its management of credit risk by clarifying lending standards, although local associations retain some discretion in making loan decisions. Institutions in most districts are using differential loan pricing, so that loan rates reflect, at least partially, the relative credit risk of borrowers. The FCS has also improved its internal mechanisms for controlling its exposure to interest rate risk. The banks more closely monitor their portfolios to spot mismatches between the terms of loans and the bonds issued to finance them. Portions of the system are also using sophisticated financial techniques to manage their exposure.

The fortunes of agriculture have improved since 1987, and with them the financial condition of the FCS. The system has been profitable in each of the last three years, has disposed of a large inventory of acquired property, and has stopped its loan portfolio from shrinking. Banks and associations in some districts continue to have significant financial problems, however. The next three to five years are of particular concern because two of the primary sources of protection for the government--the FCA's minimum risk-based capital standards and the insurance fund--are not yet fully in place.

The FCS will eventually have several tiers of capital or capital-like funds on which to draw when another agricultural downturn occurs. The FCA requires each system institution to have permanent capital equal to at least 7 percent of risk-adjusted assets by the end of 1993. After collateral pledged to back FCS obligations and earnings, this capital will be the first funds available to absorb losses. If internal resources are insufficient, system institutions will be able to seek additional assistance from the insurance fund, which has a target level of at least 2 percent of the FCS's insured liabilities. If neither source is sufficient, the district banks are jointly and severally liable for all system obligations. This means that financially healthy portions of the FCS would be called on to assure timely payment on borrowings by institutions in the system that could not meet their obligations.

As a partial test of the ability of the FCA's minimum capital standards and the insurance fund to handle potential financial difficulties in the FCS, CBO conducted a simple scenario analysis, which assumed a downturn in the farm economy beginning in 1991 that is somewhat less severe than the one that occurred in 1984 through 1987. The analysis indicated that seven districts within the system might be unable to maintain their minimum capital standards throughout the 1991-1996 period. The shortfalls in three of the districts were large and persistent, and the insurance fund was not sufficiently large to offset the deficits.

The institutional capacity, statutory mandate, and statutory authority of the Farm Credit Administration are quite similar to those of the bank and thrift regulatory agencies. Because the FCS consists of several hundred institutions--most of which lend directly to borrowers--and makes many different types of loans, the FCA conducts bank-type examinations.

Policy Options

CBO examined three broad policy options that could affect the risk that the FCS poses to the government: eliminating joint and several liability, eliminating or consolidating district banks, and authorizing the Insurance Corporation to change the target size and rate of growth of the system's insurance fund. Each option would address an important issue but might compromise the financial viability of the FCS. Assessing the relative costs and benefits of these options is difficult, because the recent institutional changes in the system limit the value of historical data. A fourth option concerns possible changes in the FCA's statutory authority over Farmer Mac.

Eliminate Joint and Several Liability. All districts currently share the liability for the bonds issued by any FCS district. Increasingly, however, the lending that exposes the FCS to risk occurs at the local association level. Joint and several liability can give institutions in some districts an incentive to take excessive risk, since they reap the benefits of lending but share the responsibility for repayment of their obligations with institutions in other districts.

Eliminating joint and several liability would address these concerns but could have other drawbacks. For example, FCS bondholders would be purchasing the bonds of institutions lacking the geographic diversity of the whole system. Investors might infer a reduced federal commitment to the system and an increased willingness of the government to allow portions of the FCS to default on their obligations. The liquidity of the debt could also decrease. All three factors could increase the borrowing costs of institutions in the system.

Eliminate or Consolidate District Banks. District banks have provided oversight and coordination of the activities of local associations. With lending authority being increasingly placed at the local level and improvements in communications and transportation, some analysts feel that FCS district banks could be eliminated safely or reduced in number. The primary benefit would be to reduce the system's operating costs. Replacing the district banks with additional national-level institutions, however, could compromise the cooperative nature of the FCS. In addition, the practicality of reducing the number of banks is diminished by the lack of an acceptable means of dealing with their nonaccruing assets.

Changes in the Insurance Fund. The board of the Farm Credit System Insurance Corporation could be given additional authority to modify the structure of the fund to help protect the government against loss in the period of heightened vulnerability that the system faces in the next few years. The Insurance Corporation's board could change the premium rates or the target fund level to respond to changes in the system's financial situation or conditions within agriculture. Such changes, however, might imperil the financial condition of the more vulnerable portions of the system.

Increasing the FCA's Authority over Farmer Mac. The FCA could be given the same clear authority to define unsafe and unsound practices in advance, to set capital standards, or to appoint a conservator or receiver for Farmer Mac that it possesses with respect to the banks and associations of the FCS. Although the FCA could use such authority to restrict Farmer Mac's freedom, the corporation would probably continue to function. An alternative approach would be to require the

FCA to report promptly to the Congress on any practices of Farmer Mac that posed an unreasonable risk to the government.

FEDERAL NATIONAL MORTGAGE ASSOCIATION AND FEDERAL HOME LOAN MORTGAGE CORPORATION

The Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), the largest GSEs, support the housing sector by linking mortgage lenders to the capital markets. The enterprises are relatively well capitalized with respect to, and subject the government to a low level of risk of loss from, their exposure to credit risk and interest rate risk, and appear to be well managed and to operate efficiently. There are substantial questions, however, about whether the Department of Housing and Urban Development (HUD), which has general regulatory authority over the two GSEs, has either the institutional capacity to conduct adequate examinations and monitoring or the statutory authority to assure that the enterprises are adequately capitalized and operate safely.

Activities, Risks, and Capitalization

Fannie Mae and Freddie Mac purchase home mortgages from lenders. Both GSEs finance most of the mortgages they buy with mortgage-backed securities (MBSs), although Fannie Mae also finances a sizable portfolio of mortgages and other assets with debt. Although Fannie Mae suffered losses in the early 1980s because of high interest rates, the enterprise has been consistently and highly profitable in recent years. Freddie Mac has always been profitable.

In the 1980s, Fannie Mae and Freddie Mac expanded their activities dramatically as thrift institutions had fewer incentives to hold mortgages in their portfolios. Today, these two GSEs enjoy a dominant position in the secondary market for the conventional mortgages they are eligible to purchase, particularly fixed-rate loans. Their significant market power arises from the implicit federal subsidies they receive, their nationwide operations, an ability to convert mortgages to MBSs with great efficiency, economies of scale, and federal capital requirements for depository institutions that favor securitization of mortgages. The implicit subsidies Fannie Mae and Freddie Mac receive and the large outstanding volume of their MBSs increase the value of the securities. Competition between the GSEs and among the lenders they serve passes this benefit on to borrowers and has reduced the interest rates on fixed-rate mortgages that the enterprises can purchase by about 0.3 percentage points (30 basis points).

Fannie Mae and Freddie Mac are exposed to comparable credit risk. The mortgages they finance are protected by borrowers' down payments, property appreciation, insurance, and agreements by lenders. Fannie Mae's financial difficulties in the early 1980s induced it to purchase some riskier mortgages in the hope of earning higher returns. These loans performed significantly worse than those financed by Freddie Mac in the same period. Since the major changes in Fannie Mae's underwriting guidelines in 1985, however, the two GSEs' guidelines for single-family mortgages have been virtually identical, and the single-family loans each has purchased have had quite similar risk-related characteristics and geographic distributions. The performance of the mortgages purchased by each enterprise since 1985 has also been comparable. If Fannie Mae and Freddie Mac continue to compete vigorously, they are likely to continue to be exposed to similar credit risk. Competition induces them to maintain similar underwriting guidelines and prices in order to avoid a deterioration in the quality of the loans that lenders sell them.

Fannie Mae was exposed to significant interest rate risk in the late 1970s and early 1980s, but has reduced its exposure greatly in the last decade. Today, each GSE's exposure is a function of its strategy for financing the mortgages it buys. Fannie Mae finances loans with debt whenever it expects to earn enough on average to compensate for the risk that changes in interest rates will produce low returns. The GSE began issuing large amounts of debt that it can prepay, or call, in 1989, and plans to increase the percentage of its long-term debt that is callable. Callable debt raises its interest expense, but reduces its exposure to interest rate risk by stabilizing its net interest income. Freddie Mac has consistently taken very little interest rate risk by financing nearly all the mortgages it purchases with MBSs.

Perhaps the greatest risk to Fannie Mae and Freddie Mac is a nationwide recession or depression that would significantly increase the default losses on their mortgages and lower their income from MBS guarantee fees. The GSEs and the Office of Management and Budget have used stress tests that simulate the performance of mortgages in an economic downturn to assess the severity of their exposure to this risk. The results of the stress tests imply that the enterprises would be able to survive such conditions for an extended period.

Other analyses suggest that large changes in interest rates are unlikely to harm Fannie Mae and Freddie Mac significantly. Freddie Mac's financing strategy insulates it from almost all risk of loss. Although Fannie Mae's portfolio makes it more exposed, its higher ratio of capital to assets and MBSs and the profitability of its portfolio provide some protection against its greater exposure to interest rate risk.

Both enterprises are currently in compliance with the capital standards they impose on themselves. Moreover, each has the capacity to increase its capitalization significantly over the next five years by retaining earnings and without selling additional stock. If the GSEs achieve these potential increases and do not raise their overall risk, the federal government's risk exposure will decline.

CBO's conclusions about the credit risk, interest rate risk, and capitalization of Fannie Mae and Freddie Mac are based on data provided by them. To be confident about the enterprises' risk exposure and capitalization, the government would have to conduct a thorough examination of their operations to verify the data they provided and to assess their exposure to management and operations risks.

HUD's Supervision and Regulation of Fannie Mae and Freddie Mac

The Department of Housing and Urban Development (HUD) has had general regulatory authority over Fannie Mae since 1968, and acquired the same authority over Freddie Mac in 1989. HUD has no clear statutory mandate to assure the safe and sound operation of the GSEs, however, and the extent of its statutory authority is disputed. This disagreement could be a source of conflict if the department attempted to set a capital standard for the GSEs that was more restrictive than the leverage ratio now imposed by their charters, or to enforce such a standard or take other action if either enterprise began to falter. Although HUD has created the Financial Institutions Regulatory Board to articulate supervisory issues and options for the Secretary and has allocated staff positions to support the board, the department does not have sufficient institutional capacity to conduct examinations of the GSEs or to monitor their activities effectively.

The department can require Fannie Mae and Freddie Mac to devote a portion of their mortgage purchases to low- and moderate-income housing, if the loans provide the GSEs with a reasonable economic return. It is unlikely that the department could use this authority to jeopardize the safety and soundness of the GSEs. HUD's authority to disapprove new mortgage purchase programs is a source of conflict with the enterprises, however, since the department asserts a right to consider the effect of new activities on competition with other financial institutions and on consumers, whereas Fannie Mae and Freddie Mac do not believe that HUD has such authority.

Options for Change in the Current Regulatory Structure

The Department of Housing and Urban Development could be given the same institutional capacity to supervise Fannie Mae and Freddie Mac as the Federal Deposit Insurance Corporation and other federal agencies have to supervise federally insured depository institutions. Specifically, the department could be allowed to assess the two GSEs for the costs of supervising them--or, more narrowly, for the costs of examinations--and to determine the budget, number of personnel, and salaries of its new regulatory staff. Charging only for the cost of examinations would prevent HUD from using assessments to subsidize some of its other activities, but reliance on appropriated funds could limit the resources available for off-site monitoring and analysis of the enterprises.

The department (or another supervisory agency) could also be given a clear statutory mandate to protect the government from excessive risk. Consistent with this mandate, the department could be authorized to set risk-based capital requirements, enforce capital standards and other limits on risk taking, take action if either GSE was insolvent or close to insolvency, and streamline the supervisory process of the enterprises if it found their overall risk to be low. HUD could be given a significant amount of discretion in exercising such authorities. It could be required to use stress tests to evaluate the risks and capital adequacy of Fannie Mae and Freddie Mac, but given the flexibility to develop ones that it deemed appropriate; granted specific enforcement powers and allowed to use them to enforce capital requirements and to eliminate practices that it found to be unsafe and unsound; and allowed to appoint a conservator if either GSE was close to insolvency. These authorities would enable HUD to require the enterprises to correct management weaknesses or operating deficiencies that it had detected in examinations, or to address practices that it considered to be unsafe and unsound but that had not resulted in large losses. The department could also take swift action to prevent an undercapitalized or insolvent Fannie Mae or Freddie Mac from increasing the risk of its activities.

Alternatively, HUD's discretion could be narrowly limited in statute. The stressful economic conditions and other rules that would form the basis for risk-based capital requirements for Fannie Mae and Freddie Mac could be specified in law to some degree. The department's enforcement actions could be limited to situations in which either enterprise was not in compliance with the standards. If HUD and either GSE could not agree on a recapitalization plan, the department could be required to seek legislation. This approach would assume that Fannie Mae and Freddie Mac are unlikely to suffer significant losses without HUD's detecting them, and that large losses would occur slowly enough to allow an adequate recapitalization plan to be implemented. It would reduce the possibility that the department could set capital requirements that were too high or would intervene in the operations of Fannie Mae or Freddie Mac even though they met federal capital requirements.

Issues in Setting Capital Requirements for Fannie Mae and Freddie Mac

Unlike the FHLBs and depository institutions that invest in mortgage loans, Fannie Mae and Freddie Mac are not subject to binding federal capital requirements. HUD or another supervisory agency could be allowed to set a binding, risk-based capital requirement for the two GSEs. Establishing such a standard would raise issues about the treatment of interest rate risk and about the possible economic effects of requiring the enterprises to raise their capitalization more rapidly than they could without lowering returns or raising prices. A standard could take interest rate risk into account by varying each GSE's required amount of capital with its exposure to this risk. Requiring Fannie Mae to hold more capital to protect against its exposure could cause it to reduce the rate of growth of or to shrink its portfolio and could limit its ability to provide some services to the mortgage market. Continuing to allow Freddie Mac to increase its exposure to interest rate risk without raising its capitalization could lead the GSE to change its financing strategy, although this would require a change in its risk preferences.

Requiring Fannie Mae and Freddie Mac to increase their capital more rapidly would reduce the government's exposure. It could also lead to small increases in mortgage rates (which would lower the market values of outstanding mortgages and MBSs), although the reductions in mortgage origination and servicing costs likely to occur in the next decade could offset any increases. Capital standards that reduced the implicit federal subsidy to the two GSEs might also help lenders to compete with them for loans that the enterprises buy.

FEDERAL HOME LOAN BANK SYSTEM

The principal purpose of the Federal Home Loan Bank (FHLB) System is to provide loans to depository institutions that finance lending for residential mortgages. The system exposes the government to a minimal amount of risk, but is at a critical juncture. Financial markets have evolved since the system was created in the 1930s, and fully private firms (in concert with federal agencies) can now provide the services once provided only by the FHLBs, although at a somewhat higher cost. Thus, the government must decide whether the system is still needed to provide these services. If the Congress opts to preserve the FHLB system, it may wish to take several steps to improve the system's viability and to help level the playing field in the nation's system of housing finance.

Activities, Risk, and Capitalization

The FHLB system provides a variety of services to its member/owners, which are primarily thrifts but also include commercial banks, credit unions, and insurance companies that have more than 10 percent of their portfolios in home mortgages and related assets. The system's most important activity is providing loans (called advances) to its members for short-term liquidity and to finance housing. The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) required the banks to make a one-time payment of $2.1 billion from their retained earnings, as well as a fixed annual payment of $300 million, to help cover the interest and principal payments on debt issued by the Resolution Funding Corporation (REFCORP) to finance a portion of the cost of resolving insolvent thrifts. FIRREA also directed the banks to devote minimum amounts each year to subsidize advances made to institutions that finance affordable housing for low- and moderate-income families.

The FHLB system's exposure to credit risk is quite small, primarily because most of the system's assets are advances, which are collateralized with high-quality assets. In almost 60 years of operation, no member of the FHLB system has ever defaulted on an advance. The banks have also controlled their exposure to interest rate risk relatively successfully in the past, and current measures of interest rate risk show that changes in interest rates would have only small effects on their financial condition.

The demand for FHLB advances has fallen recently and is expected to continue to decline, but this trend is unlikely to cause a significant increase in the system's exposure to risk. The FHLBs should be able to reduce their costs enough to match the decline in income caused by the shrinkage of their assets. Demand for advances is likely to continue to fall for two reasons. First and foremost, the traditional industry served by the system--the savings and loan industry--is shrinking, which implies that fewer advances will be needed in the future by that industry to meet liquidity and other needs. Second, certain provisions of FIRREA impede the recruitment of new members into the system and inadvertently have created some destabilizing dynamics. As new members decide not to join the system, gross income from advances falls with the shrinkage of the thrift industry. As it does, the fixed payments to REFCORP and for affordable housing take an ever larger fraction of the system's income, which causes dividend yields on FHLB stock to drop and justifies the original decisions of potential members not to join.

The FHLB system is well capitalized, with the book value of capital averaging about 7 percent of assets at the end of 1990. Two types of federal capital standards require the system to maintain high levels of capitalization. First, members must hold stock in an FHLB as a condition of membership and to obtain advances. Second, federal regulations impose a minimum capital standard on the system as a whole, requiring aggregate capital levels to be at least 8⅓ percent of the system's outstanding consolidated obligations.

The FHLB system is required to hold much higher levels of capital than Fannie Mae and Freddie Mac maintain. This implies that the latter two GSEs receive a larger implicit subsidy than the FHLBs. The difference is one reason why lenders that use FHLB advances are at a competitive disadvantage vis-a-vis Fannie Mae and Freddie Mac in financing conventional mortgages that those GSEs can purchase, particularly fixed-rate loans.

Federal Supervision and Regulation of the FHLB System

The Federal Housing Finance Board (FHFB) has ample statutory authority to prevent the system from suffering significant losses. The FHFB has been given broad powers, including the authority to determine the compensation of the members of the board of each FHLB, to suspend or remove board members or any bank employee, and to liquidate or reorganize a bank if necessary. The FHFB has the final word on each bank's budget, quarterly dividend payments, and applications for new members.

The FHFB is a relatively new agency. A definitive assessment of its performance, therefore, is not yet possible. The FHFB was created in 1989 to replace the Federal Home Loan Bank Board (FHLBB), which regulated the FHLB system (and the thrift industry) throughout most of its history. In its first full year of operation, the FHFB experienced some difficulties in accomplishing its goals, but none of these problems threatened the safety and soundness of the system. Many of the problems reflected the inevitable difficulties of developing a new agency, and the board has taken steps to address some of them.

Policy Options

Although the FHLB system exposes the government to little credit risk or interest rate risk, three policy issues can be raised about the system's future. First, the system may no longer play an essential role in overcoming imperfections in the nation's housing finance system. Consequently, the Congress may wish to consider phasing out the FHLBs. Eliminating the system would raise the cost of funds to thrifts somewhat and could adversely affect federal support for affordable housing if alternative programs were not funded. The effect on the thrifts' cost of funds would not be large, because the high capitalization of the system has limited its ability to provide significant implicit subsidies to its members. Reducing the system's capital standards could raise its ability to subsidize mortgage lenders (which would increase its role in the housing finance system), but at a cost of increasing the government's exposure to risk.

Second, if the FHLB system is preserved, the Congress may wish to take steps to improve its viability. The most important step would be to require the system to devote a proportion of its income, rather than fixed amounts of money, to cover REFCORP's financing costs and subsidize affordable housing. This change would raise prospective dividends on FHLB stock and enhance the system's ability to attract new members. In addition, the Congress may wish to consider reducing (or eliminating) the preferential treatment given to members of the FHLB system with 70 percent or more of their assets in home mortgages. Such a change could increase the membership of commercial banks in the system. Most of these banks have less than 70 percent of their portfolios in home mortgages, but because of their size, may have substantial holdings of mortgages in dollar terms.

Third, the government may wish to set comparable federal capital requirements for the FHLB system and the other two housing GSEs--Fannie Mae and Freddie Mac. Making capital standards comparable for all three enterprises would allow each to provide equivalent implicit federal support to the lenders they serve and would be a step toward leveling the playing field in the housing finance system. The government could set comparable requirements by imposing a uniform statutory minimum standard, or by requiring them to have enough capital to pass the same credit and interest rate stress tests and to maintain comparable amounts of capital to cover their exposure to management and operations risks.

STUDENT LOAN MARKETING ASSOCIATION

The Student Loan Marketing Association (Sallie Mae), which provides financing and liquidity to the market for student loans, exposes the government to a negligible amount of risk at present. The principal policy issue with respect to Sallie Mae is what action--if any--the government should take to prevent the enterprise from increasing its exposure to risk in the future.

Activities, Risks, and Capitalization

Sallie Mae exists to encourage lenders to originate federally guaranteed student loans (GSLs). The GSE does so by agreeing to buy student loans and by providing funds that lenders can use to make and hold such loans. Sallie Mae also provides lenders with management and operational support.

Sallie Mae's exposure to credit risk is small because most of its assets are either fully guaranteed by the federal government or fully collateralized by federally guaranteed claims. The enterprise could experience losses if state agencies that guarantee student loans were not fully reimbursed by the government and became insolvent, if its loans to lenders were not fully collateralized, or if counterparties to its interest rate exchange agreements defaulted on their obligations, but its exposure to these sources of credit risk is insignificant. Sallie Mae minimizes its exposure to interest rate risk by financing its variable-rate assets with variable-rate debt and, on occasion, through interest rate exchange contracts.

These conclusions about the low level of Sallie Mae's exposure to credit risk and interest rate risk are consistent with the observed stability of the GSE's earnings. Neither recession, nor sharp swings in interest rates, nor declines in real estate or commodity prices have had much effect on its earnings. The enterprise's steady profitability is both evidence of absence of risk and a buffer against loss by the government from the enterprise's operations.

Sallie Mae's capitalization also provides adequate protection for the government. A stress test conducted by the Office of Management and Budget indicates that the GSE would remain adequately capitalized and make money even if its performing assets and the terms of the GSL program changed significantly.

Federal Oversight of Sallie Mae

There is no federal agency with a statutory mandate or authority to supervise the safe and sound operation of Sallie Mae. Periodic Congressional oversight is the most significant form of federal monitoring and control of the GSE. The Secretary of the Treasury has statutory authority to examine Sallie Mae's financial records and is required to report annually to the President and the Congress on the enterprise. Treasury has fulfilled this requirement by sending copies of Sallie Mae's annual report to the Congress.

Options for Limiting Future Federal Exposure to Risk

The Congress could limit the government's future exposure to risk from Sallie Mae's operations by relying on enhanced Treasury oversight and early warning, requiring private risk assessments, subjecting the GSE to a new agency created to supervise all the enterprises, or by privatizing Sallie Mae. If a genuine separation can be achieved, privatization may be appealing.

One approach to privatizing Sallie Mae would be to make the implicit federal guarantee of its obligations explicit and to set a schedule for its withdrawal. Because the markets might perceive Sallie Mae as too big to fail, even without GSE status, it might also be necessary to divide the firm into several independent entities, which would have none of Sallie Mae's current ties to the government. The new entities would be subject to the antitrust laws. This approach would require an efficient division of the enterprise that minimized any losses of economies of scale. The government could retain a small, standby presence in the secondary market for student loans by purchasing the residual elements of Sallie Mae short of its complete dissolution, and operating it directly as a federally owned corporation. This approach could provide gains for the student loan market by increasing competition, for Sallie Mae stockholders by allowing entry into new lines of business, and for the government by eliminating its exposure to the enterprise's risks. It is not clear, however, that the gains of privatization in this manner would offset the legal and administrative costs involved.

CHAPTER I

PUBLIC PURPOSES AND RISKS OF GSEs

Government-sponsored enterprises (GSEs) are federally chartered financial institutions that facilitate the flow of investment funds on favorable terms into agriculture, housing, and higher education. Today, there are five enterprises: the Farm Credit System, the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac), the Federal Home Loan Bank (FHLB) System, and the Student Loan Marketing Association (Sallie Mae). The legal powers, organizational structures, and operating styles of the GSEs vary, but they share four characteristics: they are privately owned, operate nationwide, have specialized lending powers, and benefit from an implicit federal guarantee that enhances their ability to borrow. These attributes set them apart from other federally chartered corporations (see Box 1).

GSEs raise two public policy issues. First, providing financial services exposes them to risk--the possibility that returns will be lower than expected. If any enterprise suffered large losses that threatened its viability, the government would probably provide financial assistance so that the enterprise could continue to achieve its public purposes and the market for outstanding GSE obligations would not be disrupted. Consequently, the government bears some of the risk to which each enterprise is exposed. This raises the question of whether the cost of bearing this risk is an acceptable price to pay for an enterprise to achieve its public purposes. Reports by the Department of the Treasury and the General Accounting Office (GAO) have addressed a portion of this issue by examining the risks of each GSE.[1] A related question is how the government can assure that the enterprises achieve their public purposes, while avoiding unnecessary risks and limiting the government's financial exposure.

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[1] Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises* (May 1990); and General Accounting Office, *Government-Sponsored Enterprises: The Government's Exposure to Risks* (August 1990).

BOX 1
What Is a Government-Sponsored Enterprise?

The term government-sponsored enterprise (GSE) has no fixed meaning and can be defined broadly or narrowly to focus attention on different public policy issues.

Broadly defined, a GSE is a corporation chartered by the federal government to achieve public purposes that has nongovernmental status, is excluded from the federal budget, and is exempt from most, if not all, laws and regulations applicable to federal agencies, officers, and employees. In addition to encompassing the institutions analyzed in this report, this definition includes nonprofit corporations that receive federal appropriations such as AMTRAK, the Legal Services Corporation, and the Corporation for Public Broadcasting. It also includes the Securities Investor Protection Corporation, a nonprofit firm created to pay claims of customers of failing brokerage houses, and profit-seeking, stockholder-owned corporations like the National Consumer Cooperative Bank, which was an independent federal agency until 1981.

This broad definition of a GSE raises the issue of whether such quasi-governmental institutions are properly accountable and responsive to elected officials and the public. Indeed, many of the entities that meet the definition are indistinguishable from federal agencies, except that their enabling laws require federal budget documents to classify them as private firms.

Narrowly defined, a GSE is a privately owned, federally chartered financial institution that has nationwide operations and specialized lending powers and that benefits from an implicit federal guarantee that enhances its ability to borrow. This report examines the five enterprises--the Farm Credit System, Fannie Mae, Freddie Mac, the Federal Home Loan Banks, and Sallie Mae--that meet this definition.

In addition to these five enterprises, the Office of Management and Budget classifies four other entities as GSEs: the Financing Corporation (FICO), the Resolution Funding Corporation (REFCORP), the Farm Credit System Financial Assistance Corporation (FAC), and the College Construction Loan Insurance Association (Connie Lee). The first three institutions do not meet either a narrow or a broad definition of a GSE. FICO, REFCORP, and FAC are federal corporations created and excluded from the budget to raise funds for resolving failing thrifts and Farm Credit System institutions. Connie Lee is partly owned by the Department of Education and does not enjoy an implicit federal guarantee of its obligations and, thus, is a GSE only in a broad sense.

SOURCE: Congressional Budget Office adapted from Ronald C. Moe and Thomas H. Stanton, Government-Sponsored Enterprises as Federal Instrumentalities: Reconciling Private Management with Public Accountability," *Public Administration Review* (July/August 1989), pp. 321-329; and Harold Seidman, "Government-Sponsored Enterprises," *Public Budgeting and Finance*, vol. 9 (Autumn 1989), pp. 76-80.

Second, recent developments in the financial system raise the question of whether the GSEs are still needed to achieve their public purposes, or whether other financial institutions can do so. Before the enterprises were established, financial institutions serving farmers, homebuyers, and students often lacked immediate access to the capital markets, and home mortgages and agricultural and student loans were not easily sold. As a consequence, credit for these borrowers was more costly and, in some instances, less available than it has been since the enterprises were created. If the GSEs are still needed, there are questions about the long-run competitiveness and viability of the FHLB system.

This Congressional Budget Office (CBO) report analyzes the risks of the five GSEs and the financial exposure to the government arising from their activities. The report examines how the enterprises achieve their public purposes and how they and the government limit their exposure to risk. Policy options that would enable the government to control its risk exposure more effectively are discussed. This chapter provides an overview of the enterprises' public purposes, operations, and risks, and possible changes in federal policy.

GSEs IN THE FINANCIAL SYSTEM

Each GSE's charter act sets forth the institution's public purposes, provides special benefits under federal law that convey an implicit federal guarantee of its obligations, and authorizes and places restrictions on its activities. These ties to the government make GSEs very important institutions in the loan markets in which they operate, and facilitated a rapid growth in GSE activities in the 1980s. The implicit federal guarantee conveys subsidies to GSEs and can weaken private-market discipline of their risk taking.

Public Purposes and Operations of GSEs

The primary public purpose of all five GSEs is to provide selected borrowers access to credit for specific purposes. Each enterprise was established because wholly private financial institutions were believed to be incapable of providing an adequate supply of loanable funds at all times and to all regions of the nation. Achievement of this objective does not necessarily require subsidization of the lenders and borrowers served by GSEs, but in practice several of the enterprises do provide subsidies.

The GSEs ensure borrowers' access to credit in two ways. They borrow large amounts of funds from other financial institutions--depository institutions, pension funds, and insurance companies--and lend the money to borrowers or lenders, or purchase loans made by lenders. Some GSEs also issue or guarantee securities backed by pools of loans purchased from or assembled by lenders. Both forms of financial intermediation funnel money from lenders in regions that have surplus funds to lenders and borrowers in other regions where the demand for loans exceeds supply.

Several of the GSEs have secondary public purposes. The member institutions of the Farm Credit System were created to enable farmers and agricultural producers and cooperatives to manage, control, and own a cooperative system of primarily local agricultural lenders. The Secretary of Housing and Urban Development (HUD) may require that Fannie Mae and Freddie Mac devote a reasonable portion of their mortgage purchases to the goal of providing adequate housing for low- and moderate-income families, provided the purchases generate a reasonable economic return. The FHLB system is required by law to make some long-term loans at subsidized interest rates to finance affordable housing for families with low and moderate incomes. Because the system is owned primarily by thrift institutions, it also is responsible for making payments to the government to cover some of the costs of repaying the debt issued by the Resolution Funding Corporation (REFCORP) to finance the cost of resolving insolvent federally insured thrifts.

Most GSEs are portfolio lenders, that is, they own until maturity some or all of the loans that they purchase. The associations and banks that are part of the Farm Credit System lend directly to farmers and other agricultural producers, agricultural cooperatives, and rural utilities and homebuyers. Sallie Mae purchases and holds in portfolio federally guaranteed student loans (GSLs) and makes advances to educational lenders. To support housing finance, the FHLBs make advances (loans collateralized, or backed, by home mortgages) to thrifts and some other financial institutions. Fannie Mae and Freddie Mac hold in portfolio a portion of the residential mortgage loans that they purchase. All of these GSEs finance their portfolios by issuing notes, bonds, and other liabilities, by selling stock, and by retaining some of their earnings. (See Table 1 for a summary of the types of assets financed by the GSEs, their organizational structure, and their operations.)

TABLE 1. CHARACTERISTICS OF GOVERNMENT-SPONSORED ENTERPRISES

Enterprise	Assets Financed	Organizational Structure	Operations
Farm Credit System			
Farm Credit Banks and affiliated associations	Agricultural operating, production, supply, and real estate loans	11 regional banks, 262 associations; all are borrower-owned cooperatives	Portfolio lenders
Banks for Cooperatives	Loans and leases to agricultural cooperatives, rural utilities, and others	3 national borrower-owned cooperatives	Portfolio lenders
Federal Agricultural Mortgage Corporation (Farmer Mac)	Agricultural real estate and rural housing loans, and loans guaranteed by the Farmers Home Administration	Unitary firm	Guarantor
Federal National Mortgage Association (Fannie Mae)	Residential mortgage loans	Unitary firm	Guarantor; portfolio lender (about 28 percent of assets)
Federal Home Loan Mortgage Corporation (Freddie Mac)	Residential mortgage loans	Unitary firm	Guarantor; portfolio lender (about 6 percent of assets)
Federal Home Loan Bank System	Advances secured by residential mortgages or federal agency securities	12 district banks	Portfolio lenders
Student Loan Marketing Association (Sallie Mae)	Federally guaranteed student loans and advances secured by them	Unitary firm	Portfolio lender

SOURCE: Congressional Budget Office.

Three GSEs also guarantee securities backed by pools of loans. Fannie Mae and Freddie Mac finance most of the residential mortgages they purchase by issuing and guaranteeing mortgage-backed securities (MBSs). Such securities pay investors pro rata shares of the principal and interest payments on the underlying pools of mortgages. Thus, an investor who owns an MBS equal to 10 percent of the outstanding principal of a pool of loans will receive 10 percent of all payments of interest and principal on the mortgages. When fully operational, the Federal Agricultural Mortgage Corporation (Farmer Mac), a separate institution within the Farm Credit System, will guarantee securities backed by pools of loans for agricultural real estate and rural housing, and agricultural loans guaranteed by the Farmers Home Administration. Other financial institutions will issue most of the securities.

How each GSE earns money depends on its operations. The portfolio lenders earn income from the difference, or spread, between the interest they receive on their assets, net of administrative, default, and collection costs, and the interest they pay on their liabilities. Earnings from GSE guarantor operations derive mostly from the fees that the enterprises charge for the financial guarantees they provide, again net of administrative, default, and collection costs. Float income--money earned by investing the interest and principal payments received from borrowers for the short period before the payments are remitted to investors in mortgage-backed securities--is another source of earnings from these activities.

Benefits and Restrictions Under Federal Law

To enable the GSEs to achieve their public purposes, their charters grant them special benefits under federal law. For example, the Treasury Department has discretionary authority to purchase the debt of all GSEs except the Farm Credit System. With the exception of agricultural mortgage-backed securities guaranteed by Farmer Mac, GSE debt and mortgage-backed securities are exempt from Securities and Exchange Commission (SEC) regulation except to the extent that U.S. government securities are regulated. Most debt and mortgage-backed securities issued by GSEs are eligible to be bought and sold by the Federal Reserve when it seeks to change the money supply, may be used as collateral for Federal Reserve advances, are of equal standing with Treasury debt for investment by most banks and thrifts, and are eligible to collateralize public deposits. These legal benefits make the obligations of most GSEs nearly as liquid as Treasury debt. Moreover, the corporate earnings of the Farm Credit Banks and the FHLBs are exempt from federal income taxes, the earnings of most GSEs are exempt from state and local income taxes, and the interest paid by some enterprises is exempt from state income taxes.[2] Table 2 summarizes the special benefits granted to each GSE under federal law.

The federal government has no legal obligation to provide financial assistance to GSEs or otherwise enable them to meet their obligations.[3] Nonetheless, the enterprises' obligations are generally believed to carry an implicit federal guarantee for several reasons. First, the GSEs were chartered by or pursuant to acts of Congress and are subject to varying degrees of federal oversight. Second, the government gives GSE securities the attributes of and the same preferred investment status as Treasury debt, and exempts the obligations of most of the enterprises from the protections for investors deemed to be necessary for all debt that is publicly issued by wholly private firms. In so doing, the government signals that investors should consider GSE securities to be extremely safe. Investors infer that the government stands ready to provide financial assistance to a GSE if the enterprise gets into serious financial trouble and its ability to discharge its obligations is in doubt.

Third, the outstanding volume of GSE obligations is huge--over $980 billion at the end of 1990. Depository institutions hold a large proportion of these obligations. It is widely believed that the federal government could not tolerate a default by any GSE because it would reduce the market value of all GSE obligations, perhaps significantly, and could endanger the stability of the entire financial system.

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[2] The FHLBs, however, pay an implicit tax on their income through their contributions to the Resolution Funding Corporation and the Affordable Housing Program.

[3] The Agricultural Credit Act of 1987 authorized the Treasury to guarantee up to $4 billion in debt issued by the Farm Credit System Financial Assistance Corporation (FAC), a corporation set up to finance assistance to financially troubled Farm Credit System member institutions. The Treasury guarantee of FAC debt constitutes a partial federal guarantee against Farm Credit System losses. CBO does not consider FAC to be a government-sponsored enterprise, although its transactions are included in the system's consolidated financial statements.

TABLE 2. LEGAL BENEFITS ENJOYED BY GOVERNMENT-SPONSORED ENTERPRISES

	Farm Credit System					
Benefit	Farm Credit Banks	Farmer Mac	Fannie Mae	Freddie Mac	FHLBs	Sallie Mae
Treasury Lending Authorized (Billions of dollars)	None[a]	1.5[b]	2.25	2.25	4.0	1.0
Eligible for Federal Reserve Open-market Purchases	Yes	c	Yes	Yes	Yes	Yes
Use of Federal Reserve as Fiscal Agent	Yes	Yes	Yes	Yes	Yes	Yes
Eligible to Collateralize Public Deposits (All federal; most state/local)	Yes	Yes	Yes	Yes	Yes	Yes
Exempt from Registering with the Securities and Exchange Commission (1933 Act)	Yes	No	Yes	Yes	Yes	Yes
Government Securities for Purposes of the Securities Exchange Act of 1934	Yes	No	Yes	Yes	Yes	Yes
Eligible for Unlimited Investment by National Banks and State Bank Members of the Federal Reserve	Yes	Yes	Yes	Yes	Yes	Yes
Eligible for Unlimited Investment by Federally Insured Thrifts	Yes	Yes	Yes	Yes	Yes	Yes
Exemption of Corporate Earnings from Federal Income Tax	Yes	No	No	No	Yes	No
Exemption of Corporate Earnings from State and Local Income Tax	Yes	No	Yes	Yes	Yes	Yes
Exemption of Interest Paid from State Income Tax	Yes	No	No	No	Yes	Yes

SOURCE: Congressional Budget Office adapted from Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises* (May 1990), p. 4.

NOTE: Farmer Mac = Federal Agricultural Mortgage Corporation; Fannie Mae = Federal National Mortgage Association; Freddie Mac = Federal Home Loan Mortgage Corporation; FHLBs = Federal Home Loan Banks; and Sallie Mae = Student Loan Marketing Association.

a. Treasury is authorized to guarantee up to $4 billion of Financial Assistance Corporation bonds.

b. Upon required certification from the Federal Agricultural Mortgage Corporation, borrowing from the Treasury is authorized to make payments under Farmer Mac guarantees.

c. Not applicable; entity newly created.

Fourth, the Congress continues to support strongly the public purposes that GSEs serve, and the failure of any GSE could disrupt the achievement of its public purposes. The passage of the Agricultural Credit Act of 1987 strengthened these reasons for perceiving an implicit federal guarantee of GSE obligations. The act provided substantial financial assistance to the Farm Credit System after it lost $4.6 billion in 1985 and 1986.[4]

GSEs pay an implicit price, levied in terms of restrictions on their activities, for the legal and financial benefits they enjoy. Their charter acts require them to engage in specific businesses and restrict the types of assets they can finance. These restrictions limit their ability to diversify their activities among loan products or among financial services and other lines of business. They must supply funds to local lending markets across the nation throughout the business cycle, although they may adjust the types of loans they buy and the interest rates and fees they charge to reflect changes in loan risk. As a result, at times GSEs may make or purchase loans that they would not if they were wholly private firms. Further, some GSEs pass through a portion of the financial benefits they enjoy by virtue of government sponsorship to the lending markets and borrowers they serve. Finally, the Department of the Treasury must approve any issuing of debt by all the enterprises except the Farm Credit System. The Treasury exercises this authority to avoid congestion in the capital markets, without reference to the safety and soundness issues.

Implications of the Implicit Federal Guarantee

The implicit federal guarantee of GSE obligations has important consequences for GSEs, the borrowers they serve, and the federal government. The implicit federal guarantee leads investors in a GSE's debt or mortgage-backed securities to believe that the federal government bears most if not all of the risk of the enterprise's activities that the owners do not bear. As a result, all of the GSEs can borrow at near-Treasury rates, and Fannie Mae and Freddie Mac can sell mortgage-backed securities at prices that exceed those at which wholly private firms issue comparable securities. Further, when the financial condition of a GSE deteriorates and its risk increases, investors do not raise the yields that they require on the obligations of the GSE by as much as they would if the enterprise was a wholly private firm. For example, when Fannie Mae and the Farm Credit System suffered large losses in the 1980s, the spreads between the market yields on their debt and the yields of other GSEs increased by only about 100 basis points (1 percent). Moreover, Fannie Mae was able to borrow large amounts of funds from capital markets even after high interest rates had caused the market value of its assets to become substantially less than the market value of its liabilities.[5]

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[4] To CBO's knowledge, the only case of a GSE failing to pay off a liability occurred when the Federal Land Bank of Jackson defaulted on its trade creditors after the Farm Credit Administration placed it in receivership in May 1988. See Moody's Investors Service, *U.S. Government-Sponsored Enterprises (GSEs)* (February 1990), p. 6. The Financial Assistance Corporation, created and subsidized by the Agricultural Credit Act of 1987 to bail out failing Farm Credit System institutions, has provided funds to the Jackson Bank's receiver to enable it to make good on its portion of the system's consolidated obligations.

These borrowing advantages provide an implicit federal subsidy to each GSE. No consensus exists on the best method for estimating the value of this subsidy.[6] Nonetheless, analysts agree that the greater the GSE's exposure to risk--that is, the less capital it has for a given set of assets, liabilities, and guarantees--the larger the implicit federal subsidy.

By greatly loosening the tie between the financial condition of a GSE and its cost of funds, the implicit federal guarantee reduces the degree to which the government can rely on market discipline to prevent the GSE from taking excessive risks. Private investors are averse to and require compensation for bearing risk of loss. Prospective investors in a wholly private firm's debt scrutinize the company's financial condition, operations, and earnings prospects, and may obtain the judgments of credit-rating agencies about the firm's capacity to meet its obligations. In general, the higher the risk of the firm, the higher the interest rates investors will require the firm to pay to borrow. They may also require loan covenants that limit the firm's ability to increase the risk of its activities or its leverage during the life of a debt instrument. In the extreme, investors will not purchase additional debt from the firm. The requirement that a firm compensate creditors for bearing additional risk gives owners and management an incentive to make sure that prospective activities and investments are likely to generate returns that are adequate to enable the firm to pay its creditors and earn a reasonable return on equity. By enabling investors to look to the federal government rather than to a GSE's balance sheet and earnings capacity as the ultimate source of funds to meet the GSE's obligations, the implicit federal guarantee of GSE obligations weakens this incentive to balance the costs and returns of increasing risk.

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[5] For the increases in the yields on Fannie Mae and Farm Credit System obligations in the 1980s, see Fannie Mae, *1983 Annual Report* (1984), p. 15; Congressional Budget Office, *Government-Sponsored Enterprises and Their Implicit Federal Subsidy: The Case of Sallie Mae* (December 1985), pp. 37-38; and General Accounting Office, *Government-Sponsored Enterprises: The Government's Exposure to Risks*, pp. 85-89. The Department of Housing and Urban Development found Fannie Mae to be insolvent on a mark-to-market basis at the end of calendar years 1978 through 1984. See *1986 Report to the Congress on the Federal National Mortgage Association* (June 1987), p. 100. Market value accounting is discussed in Box 3.

[6] For analyses of and different approaches to valuing the implicit federal subsidy, see Congressional Budget Office, *Government-Sponsored Enterprises* (December 1985); Edward J. Kane and Chester S. Foster, "Valuing Conjectural Government Guarantees of FNMA Liabilities," in Federal Reserve Bank of Chicago, *1986 Proceedings of a Conference on Bank Structure and Competition* (1986), pp. 347-368; Robert Van Order, "User Fees and Mortgage Markets," *Housing Finance Review*, vol. 6 (1987), pp. 93-114; and James F. Gatti and Ronald W. Spahr, "Valuing the Implicit Government Guarantee of GSE Obligations: The Case of the Federal Home Loan Mortgage Corporation" (paper prepared for the Congressional Budget Office, September 1990).

The implicit federal guarantee does not eliminate all market discipline of GSE risk taking, however. The higher a GSE's capital, the greater the incentive of owners and management to limit the institution's risk, since sufficiently large losses would wipe out the owners' equity and would probably lead to management's being replaced. The consistent profitability and low risk of some GSEs--Sallie Mae is the most obvious example--suggest that enterprise owners do respond to this incentive and limit risk. Nonetheless, if a GSE's capital is very low or unavailable to absorb losses, owners may believe they have little stake in the enterprise and, thus, have a strong incentive to increase the risk of new investments and activities. In the extreme, if a GSE is insolvent, owners may have an incentive to increase the risk of the enterprise in an effort to gamble it back to solvency.

Growth of GSE Activities

Loans purchased and securities issued by GSEs have increased rapidly in the last two decades. Outstanding GSE debt and mortgage-backed securities totaled over $980 billion at the end of 1990, as shown in Table 3. On average, these obligations increased at about 16 percent a year in the 1970s and nearly 19 percent a year in the 1980s. Average annual growth was substantially higher than the rate of inflation and national income growth in both decades. Most of the growth was in the housing area, where debt and mortgage-backed securities issued and guaranteed by Fannie Mae, Freddie Mac, and the FHLB system increased more than fourfold in the 1970s and more than sevenfold in the 1980s. Outstanding FHLB system debt declined in 1989 and 1990,

TABLE 3. GOVERNMENT-SPONSORED ENTERPRISE SECURITIES AND GUARANTEES OUTSTANDING AT END OF YEAR (In billions of dollars)

Enterprise	1970	1975	1980	1985	1986	1987	1988	1989	1990
Farm Credit System									
Farm Credit Banks[a]	11.4	24.3	51.8	60.6	54.3	45.6	41.1	42.4	41.9
Banks for Cooperatives	1.9	3.8	8.6	9.4	8.6	9.9	11.9	12.6	13.3
Farmer Mac[b]	c	c	c	c	c	c	c	c	c
Fannie Mae									
Debt	15.2	30.0	54.9	94.0	93.6	97.1	105.5	116.1	123.4
Mortgage-backed securities	c	c	c	55.0	97.2	140.0	178.3	228.2	299.8
Freddie Mac									
Debt	c	5.6	4.7	11.8	13.4	17.5	24.8	24.1	28.4
Mortgage-backed securities	c	1.6	17.0	100.5	169.2	212.6	226.4	272.9	316.4
Federal Home Loan Bank System	10.5	16.4	37.3	75.6	89.6	116.4	136.5	136.8	117.9
Sallie Mae	c	0.3	2.7	13.4	17.1	21.4	27.0	33.6	39.0
Total	38.9	82.0	176.9	420.3	542.9	660.5	751.4	866.7	980.1

SOURCE: Congressional Budget Office based on information from the GSEs.

NOTE: Debt includes notes, bonds, and multiclass debt securities (including subordinated debt).

a. Before 1987, composed of Federal Intermediate Credit Banks and the Federal Land Banks.

b. Guarantees.

c. Not yet operating.

but the growth in Fannie Mae and Freddie Mac's obligations offset the drop. Sallie Mae's financing of student loans also rose rapidly, nearly tripling between 1985 and 1990. After increasing more than fivefold between 1970 and 1985, the Farm Credit System declined by over a fifth by the end of 1990.

Various factors stimulated the rapid growth in GSE activities. First, the demand for loanable funds increased during the period as the baby boom generation reached the homebuying years and inflation raised the values of residential and farm properties and the cost of higher education. Second, changes in federal policy and a decline in the profitability of the thrift industry reduced thrifts' incentives to hold in their portfolios the home mortgages they make. High interest rates also gave thrifts an incentive to exchange low-yield, fixed-rate mortgages for MBSs. The first of these changes in incentives resulted in a short-term increase in mortgage rates, which may have been partially offset by a decline in other interest rates. Third, Fannie Mae and Freddie Mac responded to the opportunities presented by these changes and to the wave of mortgage refinancings in 1986 and 1987 by expanding their use of mortgage-backed securities to finance home mortgages that they are eligible to purchase, particularly fixed-rate loans. Fourth, as loans financed by the GSEs and their outstanding debt and mortgage-backed securities grew, the liquidity of their obligations increased, which provided additional pricing advantages above those conveyed by the implicit federal guarantee and economies of scale. Fifth, the risk-based capital requirements imposed on federally insured depository institutions have also contributed to the growth in outstanding mortgage-backed securities issued by Fannie Mae and Freddie Mac. As discussed in more detail in Chapter IV, a major result of these changes has been a gradually increasing shift of the credit risk of home mortgages from depository institutions to Fannie Mae and Freddie Mac.

Alternatives to GSEs

The government can use other instruments of federal policy to provide many of the financial intermediation services that GSEs perform. These alternatives include federal credit programs and mixed-ownership government corporations. Fully private financial institutions may also be able to achieve some of the same objectives.

Federal Credit Programs. Some federal loan and loan guarantee programs have purposes and provide services that are similar to those of the GSEs. The Farmers Home Administration (FmHA), for example, makes agricultural loans for many of the purposes for which the Farm Credit System lends. The Government National Mortgage Association (Ginnie Mae), an agency within the Department of Housing and Urban Development, guarantees securities backed by home mortgages insured by the Federal Housing Administration (FHA) or guaranteed by the Department of Veterans Affairs (VA) or the Farmers Home Administration. Ginnie Mae's guarantee makes these securities more liquid and marketable, and, therefore, more attractive to investors, than are single federally guaranteed loans.

Relative to GSEs, federal credit programs have advantages and disadvantages as instruments of federal policy. On the plus side, recent reforms of the budgetary treatment of federal credit assistance will enable the government to measure more accurately and budget explicitly for the subsidy cost of federal loan and loan guarantee programs.[7] The cost of the implicit federal subsidy provided to GSEs is not included in the federal budget or controlled directly by the government. Also, the size of the enterprises and their prominence as private financial institutions arguably may make it more difficult for the government to control their activities than those of federal agencies.

On the negative side, if GSEs were simply eliminated, but federal credit programs were not given expanded authority to serve all of the borrowers currently served by the enterprises, the risk to the government could increase. In such a situation, some of the higher-risk borrowers they serve would receive federal loans or guarantees, while lower-risk borrowers would be served by private lenders. The cost to the government of assisting the higher-risk borrowers directly, but not the lower-risk ones, would be higher than serving both groups through the GSEs. Doing so would cost more because the government could not use earnings from loans to the lower-risk borrowers to absorb some of the losses on loans to the higher-risk borrowers, as the enterprises do, or be protected by the GSEs' capital. Also, the enterprises may manage their operations more efficiently and at less cost to the government than federal agencies could manage credit programs.

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[7] The reforms of the budgetary treatment and control of federal loan and loan guarantee programs were required by section 13201 of the Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508). For a discussion of the reforms, see Congressional Budget Office, *Credit Reform: Comparable Budget Costs for Cash and Credit* (December 1989). The new budget treatment is summarized in Congressional Budget Office, "An Explanation of the Budgetary Changes Under Credit Reform" (Staff Memorandum, April 1991).

One option for controlling the federal government's risk exposure to GSEs would be to provide an explicit guarantee of all enterprise obligations.[8] An explicit guarantee would reduce the borrowing costs of the enterprises somewhat by eliminating any uncertainty about the government's commitment to stand behind them. The cost of this uncertainty is largest when a GSE is experiencing financial difficulty, when the government would seem to have an interest in minimizing its expenses.

The estimated annual subsidy cost of the guarantee could be measured and included in the federal budget. This cost would not be subject to the annual appropriation process, however, but would be treated as an entitlement under the control of the authorizing committees, as are VA guarantees of home mortgages, for example. In theory, the government could control the subsidy cost of the guarantee by charging the enterprises fees that varied with their overall risk. Until there is a wider consensus on how to measure this cost, however, it would seem prudent to rely on other means to control the cost to the federal government of bearing risk.

Mixed-Ownership Government Corporations. The government can also provide financial intermediation services through corporations that both private investors and the government own partially but that lack the legal benefits granted to GSEs. The College Construction Loan Insurance Association (Connie Lee) is a case in point. Sallie Mae and the Department of Education jointly own Connie Lee, and the President appoints a minority of the firm's directors. However, Connie Lee cannot borrow from the Treasury and is not exempt from any of the federal, state, or local laws or regulations from which GSEs are exempt. As noted in Box 1, it is a GSE only in a broad sense.

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[8] This option is discussed in more detail in Congressional Budget Office, *Government-Sponsored Enterprises*, pp. 37-40.

The advantage of a mixed-ownership government corporation is that the government can limit its exposure to loss to the amount of its equity investment. If the outstanding securities or guarantees of a mixed-ownership corporation became very large, however, it is unclear that the government would allow it to fail, in which case safety and soundness issues similar to those a GSE poses would arise. This suggests that mixed-ownership corporations are best used in a limited way, such as to test a new line of business, as Connie Lee is doing for issuing college construction loans.

Fully Private Financial Institutions. A third alternative is for the government to rely on fully private financial institutions to serve farmers, homebuyers, and students. Enhancements of the technology of financial services and the development of securitization not only have helped to expand GSE activities, but also have increased the ability of fully private firms to offer the financial services that the enterprises provide. Private firms probably would not give all borrowers served by the GSEs in all regions access to credit at all points in the business cycle, however. Chapters III through VI of this report summarize the activities of the principal competitors of each GSE.

Converting GSEs into fully private corporations would help other financial institutions to increase their capacity to provide the same financial services. Doing so would also prevent the three enterprises that have considerable market power--Fannie Mae, Freddie Mac, and Sallie Mae--from earning excessive profits. To those ends, the Reagan Administration proposed that the government convert Fannie Mae into a fully private entity, and explored the possibility of severing the government's ties to Sallie Mae.[9] Privatization of Freddie Mac has also been considered.[10] Such proposals raise the issue of whether the government's exposure to the risk of GSEs would actually be reduced by converting them to fully private, but equally large, firms. This concern might be addressed by dividing a very large GSE into a dozen or more smaller firms. Competition would make failure of any one of these firms more likely than failure of a single enterprise, but because the failure of one or a few firms would not prevent the industry from continuing to serve borrowers, the Congress might be willing to tolerate failure. However, this strategy might result in a loss of the operating efficiencies achieved by several of the GSEs.

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[9] See Department of Housing and Urban Development, *1987 Report to the Congress on the Federal National Mortgage Association* (September 27, 1989), Chapters 3 and 4; and Susan E. Woodward, "Privatizing Financial Intermediaries: OPIC, Fannie Mae, and Sallie Mae" (unpublished paper).

Effect of GSE Activities on Treasury Interest Costs

The implicit federal guarantee of GSE obligations and the large volume of enterprise borrowing raise the possibility that GSE activities could cause higher interest rates on Treasury borrowing. In general, the effect on these interest rates is thought to be very small. For the most part, funds raised in credit markets by GSEs are subsequently reloaned, with the net effect on the overall level of interest rates being very slight. Because the characteristics underlying securities issued by the enterprises make them closer substitutes for Treasury debt than the various loans that GSEs make, issuing enterprise securities does raise interest rates on Treasury securities relative to other rates of interest. This increase is believed to be very small and only temporary, however.

Impact on the Overall Level of Interest Rates. Concern that GSE borrowing leads to increased pressure on the overall level of interest rates would be justified if the activities of the enterprises raised the total demand for borrowing in the economy. If GSEs give prospective homebuyers, farmers, and students greater access to credit than private lenders alone would give them, if rationing of credit to other borrowers does not offset this increase in borrowing, and if overall saving remains the same, greater overall demand for borrowing will put upward pressure on the overall level of interest rates. At this time, no definitive evidence exists on whether the enterprises raise the net overall demand for borrowing. Many analysts believe that some increase occurs, however, and there is no evidence that saving rises. The increase in net borrowing is likely to be very small, in which case the greater pressure on the overall level of interest rates is small as well.

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[10] See Alan R. Winger, "Splitting Up is Hard to Do," in Federal Home Loan Mortgage Corporation *Secondary Mortgage Markets* (Spring 1987), pp. 12-15.

Effect on Treasury Rates Relative to Other Rates. Issuing GSE debt may cause a small but temporary rise in interest rates on Treasury securities relative to other rates of interest. One estimate of the effect of the enterprises' borrowing on Treasury security interest rates can be found by examining results from portfolio models, which estimate the relationships between the relative amounts outstanding and the yields of different types of securities. Portfolio models yield estimates of the expected change in relative interest rates given a change in the quantity of some asset. They are derived from what is known about the asset preferences of the private sector under usual circumstances and relate asset yields to asset holdings.

Applying the existing portfolio model results to GSE borrowing is not entirely straightforward, but one can obtain a reasonable upper-bound estimate of the effects on relative interest rates. Portfolio models are designed to show how changes in quantities of broadly defined types of assets affect yields among those types of assets. The categories of assets might include long-term (more than one year) and short-term Treasury securities, state and local debt, corporate bonds, and equities. Such narrowly defined assets as enterprise securities are not included explicitly in existing research using these models. Because investors view GSE securities as close substitutes for Treasury securities, however, the effect on Treasury rates of a $100 billion increase in enterprise debt would be parallel to that of a $100 billion increase in Treasury debt.

Results from the portfolio model approach in this case produce an upper bound because no allowance is made for the fact that most of the credit borrowed by GSEs will be returned to the credit markets in the form of an added supply of credit. Only increased pressure on interest rates is modeled, while the subsequent relending by GSEs tends to put offsetting downward pressure on interest rates.

Effects on relative interest rates estimated using portfolio models turn out to be very small. According to one model, an increase in the supply of federal bonds of $100 billion, or 0.6 percent of financial wealth, in exchange for money drives up the expected rate of return on federal bonds relative to that on short-term Treasury bills by only 0.50 basis points.[11] The same issue of Treasury securities drives up the expected relative rate of return on state and local debt by only 0.60 basis points and on corporate bonds by only 0.49 basis points. The corresponding rate of return on equities would rise by less than 0.01 basis points. An alternative model suggests somewhat larger short-term effects but similarly insignificant long-term effects.[12] In the short run, assuming that investors immediately buy and sell securities in response to rate changes, the effect on interest rates may be five times the long-term effects such as those reported above. Even if the rise in interest rates on Treasury bonds is 5 basis points, which is double the short-run estimate, these effects are still very small.

RISKS OF GSEs

Like other financial institutions, GSEs are exposed to risk--the possibility that returns may be lower than expected. Unexpectedly low returns may result from higher than expected loan default or default loss rates, unanticipated changes in interest rates, unexpected deterioration in the performance of management or operating systems, and unanticipated changes in the enterprise's line of business. The GSEs continuously monitor and take actions to control their exposure to these risks. The owners of each enterprise are also exposed to the risk that the federal government will change its public purposes or operating environment; change the level of federal supervision, regulation, and taxation of its activities; or require it to maintain more capital than the GSE would maintain on its own. This section discusses each of the risks to which the enterprises are exposed and their control strategies.

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[11] Jeffrey A. Frankel, "Portfolio Crowding-Out, Empirically Estimated," *Quarterly Journal of Economics* 100 (Supplement, 1985), pp. 1041-1065.

[12] Barry P. Bosworth, Andrew S. Carron, and Elisabeth H. Rhyne, *The Economics of Federal Credit Programs* (Washington, D.C.: Brookings Institution, 1987), Appendix A.

Credit Risk

Credit risk refers to the fact that a GSE's losses from loan defaults vary from expectations. The enterprises analyze the factors that correlate with the frequency with which borrowers default and the severity of default losses, such as the value of loan collateral or borrowers' debt service payments as a proportion of income. They use these data to form expectations about default losses on specific loans, different types of loans, and on total lending activities. The GSEs take expected default losses into account in setting loan interest rates, purchase prices, and guarantee fees. If the enterprises could predict exactly the probability and severity of loan default and operated in perfectly competitive markets, they would charge prices that exactly covered those expected losses and their operating expenses. However, a GSE's actual default losses in any period vary from its expectations. The more actual losses vary, the greater the credit risk to which the GSE is exposed.

The exposure to credit risk of the five GSEs varies significantly. The loans financed by two enterprises--the FHLBs and Sallie Mae--expose them to virtually no credit risk. The FHLBs' credit underwriting standards and collateral requirements are so stringent that no FHLB advance has ever defaulted. The federal guarantee of the GSLs financed by Sallie Mae implies that virtually all default losses accrue to the government, provided that the enterprise complies with federal regulations regarding the servicing of GSLs. The Farm Credit System is exposed to a good deal of credit risk on the agricultural loans it finances. Fannie Mae and Freddie Mac are also exposed to credit risk, but to a lesser degree.

GSEs limit expected default losses in three ways. First, they establish guidelines for underwriting, or selecting, the loans they purchase or guarantee. Underwriting guidelines address, for example, how the market value of loan collateral is appraised, how the financial condition of borrowers is evaluated, the maximum debt-servicing burden for borrowers that is accepted, and acceptable loan-to-value (LTV) ratios. Second, GSEs that purchase loans from other financial institutions and contract with those firms to service the loans also issue seller/servicer guidelines. These guidelines address factors such as the financial condition of an institution and the experience of its management. Third, some enterprises require that certain loans carry credit enhancements, which are legal agreements that transfer a portion of default losses to another party. Credit enhancements may take the form of private mortgage insurance, recourse agreements under which sellers retain full or partial responsibility for default losses on loans sold to a GSE, sellers' pledges of collateral, or other arrangements.

The Farm Credit System, Fannie Mae, and Freddie Mac use geographic diversification to minimize their exposure to credit risk. Diversification decreases the fluctuation of returns because, in most economic environments, default losses on agricultural loans and home mortgages originated in different regions of the country tend to be offset by earnings on loans in other regions. Fannie Mae and Freddie Mac easily take advantage of geographic diversification because they are unitary firms with nationwide operations. The Farm Credit System's ability to take advantage of geographic diversification (as well as diversification of other risks that vary regionally) is more limited, because the system's cooperative structure limits its ability to share risk exposure among institutions.

To monitor default losses, GSEs track average delinquency, foreclosure, and loss rates. Data may be kept for each loan program, by origination year, and for loans with identical characteristics, such as LTV ratios that correlate with default. Some GSEs also estimate the market values of the collateral of loans, such as the values of residential real estate, or monitor other indicators of borrowers' capacity to pay, such as the performance of local economies.

To monitor their exposure to credit risk, some enterprises subject the loans they have financed to credit stress tests. A credit stress test is an analysis of how an extremely adverse economic scenario would affect a GSE's default losses and capital position. Box 2 discusses the use of stress tests to analyze the enterprises' exposure to credit risk and interest rate risk, and the adequacy of their capital.

BOX 2
Using Stress Tests to Assess the Risk Exposure and Capital Adequacy of GSEs

Some of the government-sponsored enterprises and their regulators use stress tests to assess their exposure to credit risk and interest rate risk and the adequacy of their capital. A stress test is a simulation analysis of how extremely stressful economic conditions--that is, a "worst-case scenario"--would affect the performance of the assets financed by a GSE, the cost of financing those assets, and the enterprise's net income and capital position. There are four steps in devising a stress test for a GSE.

Selecting a Scenario. An economic scenario that conceivably could occur and that would be severe enough to threaten the financial viability of the enterprise must be identified. The scenario should reflect real economic relationships and the likelihood of specific historical events recurring, and be tailored to the specific risks to which the GSE is exposed.

The GSEs use different stress tests to test their exposure to risk and their capital adequacy. The Farm Credit System is vulnerable to a severe decline in the agricultural sector. Accordingly, Chapter III presents the results of a stress test that subjects the system to an agricultural downturn like the one that took place in the mid-1980s. Fannie Mae is exposed to losses caused by large increases in interest rates. One of that GSE's interest rate stress tests assumes that rates would increase to the levels of the 1979-1984 period. Fannie Mae and Freddie Mac would experience large default losses if a severe decline in employment and residential real estate values occurred nationwide. To reflect this, the credit stress tests they employ reflect experience in Texas in the mid-1980s and during a scenario modeled after the Great Depression, respectively.

Estimating Asset Performance. The performance of the GSE's assets during the stressful scenario must be estimated. With a credit stress test, historical information about the performance of different types of loans, if available, should be used to estimate the frequency and timing of loan defaults and the severity of default losses. Loan prepayments must also be estimated.

BOX 2

Simulating GSE Behavior. Assumptions must be made about how the GSE behaves during the scenario. Important questions include whether the enterprise pays dividends or purchases new loans, how new purchases are priced, and how assets are financed.

Selecting the Desired Survival Period. Finally, a fundamental policy judgment must be made about how long the GSE should remain solvent during the stressful scenario. This is a decision about how much capital the enterprise should have. Capital can be measured according to Generally Accepted Accounting Principles (GAAP), which value assets and liabilities at historical costs, or on a market value basis.

Stress tests have several advantages as tools for analyzing the risk exposure and capital adequacy of GSEs. On the plus side, they give the enterprises and the government an opportunity to test different plausible scenarios to identify those that pose the greatest threat to each GSE. The scenarios used to set capital standards can be changed over time to reflect changes in economic relationships, borrowers' behavior, financial technology, and the risks taken by the enterprises. Also, stress tests can take into account the unique features of a GSE, such as the geographic diversification of the loans it has financed. Further, they provide simple and easily understood criteria for capital adequacy.

Stress tests take into account a GSE's future cash flows in assessing its ability to withstand severe economic conditions. In principle, simulations that employ measures of the market values of an enterprise's assets and liabilities can provide equivalent information, especially with respect to exposure to interest rate risk, since market values reflect the value today of future cash flows.

A stress test is only as good as its assumptions. The usefulness of any test can be assessed by conducting sensitivity analyses, which examine how the results of the test vary as its major assumptions are changed. Sensitivity analyses are most useful for examining the reasonableness of assumptions about loan defaults and prepayments. They are less useful for assessing the reasonableness of behavioral assumptions, since recent experience may not be a useful guide to a GSE's behavior under extreme economic conditions.

Interest Rate Risk

A GSE is exposed to interest rate risk to the extent that changes in market interest rates will reduce its net income. Interest rate risk exists whenever the cash flows generated by an institution's assets and liabilities are not perfectly synchronized. These cash flows will fail to be perfectly matched if the maturities of assets and liabilities are not the same, assets and liabilities change their rates of interest in different periods, or borrowers have the option to prepay their loans before the scheduled maturity dates.

To see how maturity mismatching creates interest rate risk, consider a GSE that holds a portfolio of 30-year loans and finances them with one-year notes. On average, the enterprise will make money, since long-term interest rates generally are higher than an average of short-term rates. However, if interest rates rise, the GSE will have to roll over the liabilities at the new, higher rates well before the assets are repaid. When this occurs, its net interest income will decline. Conversely, if the enterprise finances short-term loans with long-term debt, when interest rates fall it will have to reinvest repaid funds at the new, lower rates, before it retires its liabilities. Again, its net interest income will fall.

Even if a GSE matches each of its assets with a liability of the same maturity, it still will be exposed to interest rate risk if the interest rates on the assets and liabilities change at different times. Suppose, for example, that a GSE funds a variable-rate asset, whose interest rate is reset annually, with a fixed-rate liability of the same maturity. If interest rates decline, the enterprise's net interest income will fall when the loan rate is reset.

Borrowers' prepayment options--legal rights to pay off loans before their scheduled maturity dates--also expose a GSE to interest rate risk. Changes in interest rates affect the probability that borrowers whose loans an enterprise has financed will exercise prepayment options. Suppose, for example, that a GSE purchases 30-year, fixed-rate mortgages that it expects to be repaid in 10 years on average, and finances the loans with 10-year debt securities. If rates fall, the probability that the borrowers will prepay their loans will increase, making the maturity of the loans less than the enterprise expected. The GSE will have to reinvest the unexpected prepayments at the new, lower interest rates, which will lower its net interest income relative to its expectations.

The GSEs use four techniques to measure their exposure to interest rate risk.[13] First, some enterprises monitor the differences between the dollar amounts of their assets and liabilities that will mature in selected time periods. The smaller this difference, or maturity gap, in a period, the less a change in interest rates will cause a GSE's net interest income in the period to change. In general, an analysis of maturity gaps is accurate only if the repayment and repricing schedules of an enterprise's assets and liabilities are very similar or identical. Second, a GSE can use interest rate stress tests. Such tests simulate the enterprises' financial performance under a single, extreme interest rate scenario.

Third, some GSEs use analysis of the durations of their assets and liabilities and market value accounting to assess the sensitivity of their mark-to-market net worth to changes in interest rates. An enterprise's mark-to-market net worth is equal to the market value of its assets less the market value of its liabilities. This measure may be viewed as the amount of money that would be realized if the assets and liabilities were liquidated in piecemeal fashion (see Box 3). A GSE can express its overall exposure to interest rate risk in terms of the difference, or gap, between the durations of its assets and liabilities. Duration is a measure of the sensitivity of the market values of financial instruments to changes in interest rates. The longer the duration of a security, the more a given change in interest rates will change its market value.

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[13] For more detailed discussions, see General Accounting Office, *Government-Sponsored Enterprises: The Government's Exposure to Risks*, pp. 33-36; Jan E. Luytjes, *Determining the Appropriate Measure of Interest Rate Risk from a Regulatory Perspective* (Federal Home Loan Bank Board, Office of Policy and Economic Research, Research Paper No. 154, February 1989); and Alden L. Toevs and William C. Haney, "Measuring and Managing Interest Rate Risk: A Guide to Asset/Liability Models Used in Banks and Thrifts," in Robert B. Platt, ed., *Controlling Interest Rate Risk: New Techniques and Applications for Money Management* (New York: John Wiley & Sons, 1986), pp. 256-350.

BOX 3
Historical and Market Value Accounting for GSEs

Government-sponsored enterprises use both historical cost and market value accounting. GSEs use Generally Accepted Accounting Principles (GAAP), which focus on historical costs, to report their financial condition and performance to investors. GSEs use market value accounting for planning, asset and liability management, and management of interest rate risk, and to assess the economic gains from alternative transactions.

Under GAAP, a financial institution records its financial assets and liabilities at the prices at which they are purchased or issued. They are carried at these historical, or book, values until they are repaid or sold. GAAP net worth or capital is equal to the book value of the firm's assets less the book value of its liabilities.

Historical cost accounting, as embodied in GAAP, has significant advantages and disadvantages for financial institutions, including GSEs. On the plus side, historical values are easily known, and different firms generally apply GAAP rules fairly consistently. On the negative side, GAAP ignores the effect of changes in interest rates on the market values of financial assets and liabilities. Also, GAAP treats GSE mortgage-backed securities as contingent liabilities and counts the default costs and fees they produce as they occur. Thus, GAAP capital ignores the net present value of the expected cash flows on a GSE's financial guarantee business. Further, GAAP requires financial institutions to report the cost of defaults that they can reasonably estimate, but this amount is less than the cost of all defaults that they expect to occur in future years.

Market value accounting differs from historical cost accounting in two respects. First, items not included on the GSE's GAAP balance sheet--such as financial guarantees or the value of future business--are counted. Second, all items are valued at current market prices or their equivalents. Market prices reflect current and likely future changes in interest rates, and in some cases may reflect the market's perception of credit risk. For prepayable mortgages and GSE debt securities that the enterprises can prepay, market prices also reflect investors' expectations about how likely future interest rates will affect the timing of payments. A GSE's mark-to-market net worth is equal to the market value of its assets less the market value of its liabilities plus the market value of any expected future income from guarantee fees. Where no value is assigned to current or future business opportunities, an enterprise's mark-to-market net worth is approximately equal to the amount that could be realized if it was liquidated on a piecemeal basis.

BOX 3

A GSE's mark-to-market net worth can be significantly different from its GAAP capital. This was the case, for example, when the increases in interest rates in the early 1980s caused a large decline in the mark-to-market net worth of Fannie Mae, which had funded long-term mortgages with short-term debt. It also is the case today for Fannie Mae and Freddie Mac. The excess of expected future fee income over expected future costs from these GSEs' guarantees of mortgage-backed securities substantially increases their mark-to-market net worth but is not reflected in their GAAP capital. The guarantee business of Farmer Mac will have the same effect if it is equally profitable.

Market value accounting also has advantages and disadvantages for GSEs. On the plus side, market value accounting is an essential tool for their planning and risk management, particularly management of interest rate risk. Also, market prices are available for many of the assets of most GSEs. On the negative side, there are no generally accepted standards for market value accounting. Although the GSEs use similar techniques for estimating their mark-to-market net worth, particularly for taking into account the effect of interest rates on market values, significant differences exist. There is a notable absence of consensus on how to account for expected future default losses.

Despite these limitations, mark-to-market net worth can be superior to GAAP net worth as a measure of the current financial condition of GSEs that are exposed to interest rate risk or operate financial guarantee businesses. As discussed in Chapter II, if a federal supervisory agency clearly defined the assumptions that an enterprise used to estimate its mark-to-market net worth, the measure could be used to set a minimum capital requirement for it.

SOURCE: Congressional Budget Office based on Allen Berger, Kathleen A. Kuester, and James M. O'Brien, "Some Red Flags Concerning Market Value Accounting," in Federal Reserve Bank of Chicago, *Banking System Risk: Charting a New Course* (Chicago: Federal Reserve Bank of Chicago, 1989), pp. 515-546; and Paul T. Peterson and Michael J. Kenny, "Implementing Mark-to-Market Accounting: Freddie Mac's Score Card for Managing Interest-Rate Risk," *Secondary Mortgage Markets* (Federal Home Loan Mortgage Corporation, Summer 1990).

Fourth, some GSEs combine market value accounting and analysis of asset and liability durations with simulations of future interest rates. One approach begins with current interest rates, projects a large number of interest rate paths, estimates the present value of the cash flows of the GSE's assets and liabilities along each path, and averages the present values to obtain an estimate of the enterprise's mark-to-market net worth. The GSE then estimates the sensitivity of its mark-to-market net worth by varying the assumptions about current interest rates.[14] This technique can also be used to analyze the effect of different funding strategies on the GSE's sensitivity to changes in interest rates. A related approach measures how the GSE's return on its mark-to-market net worth over a period varies across a wide range of interest rate paths.

The GSEs use six types of asset/liability strategies to control interest rate risk. First, one enterprise finances floating-rate loans with floating-rate notes that are indexed to the same Treasury bill rate. Second, some GSEs require borrowers to pay penalties for prepaying their loans. In principle, the penalties can be varied to offset the changes in the market values of the loans caused by changes in interest rates. Third, enterprises issue debt that they can prepay, or call, in the same way that borrowers can prepay their loans, so that changes in interest rates alter the market values of the assets and liabilities by similar amounts. Fourth, GSEs finance prepayable mortgage loans with mortgage-backed securities. Securitization passes most of the prepayment risk of the mortgages on to investors, although the market value of the fee income that the GSE earns for guaranteeing the mortgage-backed securities is somewhat sensitive to changes in interest rates. Fifth, some GSEs purchase assets and issue liabilities that they estimate will stabilize their mark-to-market net worth or returns over a wide range of future interest rates. Sixth, some enterprises use hedging techniques such as interest rate swaps (contracts to exchange floating- for variable-rate interest payments, or vice versa) and Treasury bill futures contracts to reduce their interest rate risk.

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[14] The Office of Thrift Supervision has proposed that federally insured thrift institutions use one version of this approach to estimate their mark-to-market net worth and its sensitivity to changes in interest rates. See Department of the Treasury, Office of Thrift Supervision, 12 CFR Part 567, Notice of Proposed Rulemaking, "Regulatory Capital: Interest Rate Risk Component," *Federal Register*, December 31, 1990, pp. 53529-53571.

Management, Operations, and Business Risks

To control credit and interest rate risk effectively, control its operating costs, and earn a competitive rate of return, a GSE must be well managed and operate efficiently. Each year the enterprise may purchase or guarantee hundreds of thousands of loans and make millions of payments to investors. Some GSEs monitor the financial condition and performance of thousands of financial institutions that sell loans to them and service loans for them. Bad management decisions or policies and deficient operating practices can lead to unanticipated fluctuations in a GSE's costs and income and, in the extreme, to major changes in its financial condition.

GSEs control their exposure to management and operations risks through strategic and operational planning, policymaking processes, control systems, management information systems, and personnel administration. The 1990 Treasury and GAO reports include preliminary reviews of the management processes and operating practices of each GSE.[15]

The business risk of a GSE is the risk associated with participating in particular lines of business. The development of new products or technologies or other factors may reduce the demand for an enterprise's services, particularly if wholly private financial institutions can compete effectively with it. Three GSEs--Fannie Mae, Freddie Mac, and Sallie Mae--are exposed to little or no business risk because they have significant market power arising from the implicit federal guarantee of their obligations, their other benefits under federal law, and economies of scale. The Farm Credit System and the FHLB system are exposed to some business risk because private firms offer competitive alternatives to some of their services.

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[15] See Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises*, pp. A-59 to A-65, B-47 to B-54, C-35 to C-38, D-44 to D-47, and E-15 to E-17; and General Accounting Office, *Government-Sponsored Enterprises: The Government's Exposure to Risks*, pp. 59-73.

How GSE Capital Affects the Government

A GSE's capital is equal to stockholders' equity (owners' investment in the firm) plus any liabilities that can or are likely to be interrupted before federal assistance is provided. This capital limits the government's exposure to the credit risk, interest rate risk, and management and operations risks of the enterprise both prospectively and retrospectively. Prospectively, it encourages owners and managers to take into account a wide range of possible outcomes, thereby minimizing their incentive to ignore potential costs to the government. Retrospectively, it is the amount of coinsurance available to absorb an enterprise's losses before the government must pay them.

The government has an interest in assuring that each GSE's capital is neither too low nor too high. Capital must be sufficient to protect against the risk of unanticipated losses that would lead to federal assistance, and to give owners incentives to limit the enterprise's risk taking in order to protect their own investments. But a higher capital standard reduces not only the implicit subsidy that the GSE receives but also the GSE's return on equity, which ironically could make it more difficult to meet a higher capital standard. If the return on equity fell below the returns available on assets of similar risk, the GSE would be unable to attract new capital and would be forced to rely on retained earnings to meet the standards. In addition, low dividend yields could cause a GSE to shrink unless federal assistance is provided or owners are prevented from liquidating their investments. As an alternative to requiring a GSE to maintain high levels of capital, the government could require it to reduce its credit, interest rate, or management and operations risks, or to shift some of its risks to private creditors.

Risk of Changes in Federal Policy

GSE owners are also exposed to the risk of changes in federal policy. Changes in charter act restrictions or benefits can change the operating costs or risk exposure and reduce the profitability of an enterprise. GSEs that invest in federally guaranteed loans are exposed to a risk that the government would change the terms of existing guarantee contracts, although such action seems quite unlikely. Sallie Mae, which invests principally in GSLs or assets collateralized by GSLs, is most exposed to this risk. (An additional risk to Sallie Mae is that the government may change the terms of the substantial explicit subsidy paid to lenders.) Even changes in federal law not directly related to an enterprise can affect its risk. For example, the 1990 Omnibus Budget Reconciliation Act reduced spending by the Commodity Credit Corporation (CCC) on farm price supports. The cuts will lower farm income and may increase the exposure to credit risk of the Farm Credit System and Farmer Mac.

In the last 18 months, increased attention to the risks and capital adequacy of GSEs has also increased the probability that the government will subject some GSEs to greater federal regulation or more stringent capital requirements. The uncertainty about capitalization may have contributed to the declines in 1990 in the market values of the stock of Fannie Mae and Freddie Mac. Legislative action on the issues of GSE regulation and capitalization would help reduce this uncertainty and might make it easier for the firms to raise additional capital, if the government requires it.

POSSIBLE CHANGES IN FEDERAL POLICY

The fundamental policy judgment about a GSE is whether the achievement of its public purposes is worth the amount of risk that the government must accept--the implicit federal subsidy that it must pay. A closely related decision concerns the level of GSE capital that will strike an acceptable balance between the objectives of minimizing the risk of the GSE by giving owners a significant stake in the GSE's financial health, on the one hand, and assuring that the enterprise is profitable enough to remain viable and achieve its public purposes, on the other. Because the government has a stake in the public purposes of each GSE and bears some of its risk, these choices are policy issues that must be decided by federal officials.

In assessing alternative approaches to striking a balance between the benefits and risks of using GSEs, the Congress may want to consider three types of changes in current federal policy. First, changes in an enterprise's charter act could be used to alter its permitted activities or its ability to take credit risk or interest rate risk. Second, the Congress could elect to strengthen federal supervision of the safe and sound operation of the GSEs, and to provide guidelines to supervisory agencies with respect to using their authorities and coordinating supervision and program regulation of the enterprises. Third, the Congress could elect to shift more of the enterprises' risks to private investors by requiring them to increase their capital or by requiring investors in their debt to bear greater risk.

PLAN OF THE REPORT

This report examines policy options of each type. Chapter II develops a framework for understanding program regulation and supervision of the safety and soundness of GSEs. It discusses specific issues in designing more effective regulation and supervision and in setting federal capital requirements for the enterprises. A proposal to centralize their supervision is analyzed. The chapter also examines the potential use of private assessments of GSE risks to minimize the risk of supervisory failure.

Chapters III through VI analyze the exposure to credit risk and interest rate risk of each GSE and how well they are capitalized with respect to each of these risks. The exposure to business risk of the Farm Credit System and the FHLB system is examined. Current federal supervision and regulation of the enterprises and possible changes in current supervisory arrangements are also discussed. Chapter III focuses on the Farm Credit System, including Farmer Mac, and supervision of the system by the Farm Credit Administration. Chapter IV examines Fannie Mae and Freddie Mac and HUD's regulation of those two GSEs. Chapter V analyzes the FHLB system and its supervision by the Federal Housing Finance Board. Chapter VI discusses Sallie Mae, which has no federal supervisor of safety and soundness.

The report's conclusions about the GSEs' exposure to credit risk and interest rate risk and their capitalization are based on data provided by them. To reach a definitive conclusion about each enterprise's exposure to these risks and its overall capital adequacy, and to assess its exposure to management and operations risks, which CBO has not assessed, the government would have to conduct thorough examinations of the GSEs' operations. At present, only the member institutions of the Farm Credit System are subject to regular federal examinations.

CHAPTER II

FEDERAL SUPERVISION AND REGULATION OF GSEs

Under current law, several federal agencies are responsible for monitoring and regulating the activities of the government-sponsored enterprises (GSEs). In analyzing the duties and powers of these agencies and possible changes, it is useful to distinguish between the supervision of their safety and soundness and the regulation of their programs. The purpose of supervision is to limit the government's exposure to risk by ensuring that the risks the GSEs assume are no greater than necessary to accomplish their public purposes. The objective of program regulation is to assure that the enterprises engage only in activities authorized by the Congress and achieve their public purposes.

The responsibilities and statutory authority of the executive branch agencies that now supervise and regulate the GSEs vary considerably. The Farm Credit Administration (FCA) is not a program regulator but has most of the supervisory authority and enforcement powers of the bank and thrift supervisory agencies with respect to the activities of the Farm Credit System. The Congress strengthened the FCA's role after the system suffered large losses in the 1980s. The Federal Housing Finance Board (FHFB) has broad supervisory authority over the Federal Home Loan Bank (FHLB) System, and programmatic authority to assure that the banks perform their mission to provide affordable housing. The Department of Housing and Urban Development (HUD) has general regulatory authority over the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), but it is not clear that HUD's powers are adequate to ensure the safety and soundness of these GSEs. The department also has regulatory authority over their programs. No federal agency has supervisory authority over the Student Loan Marketing Association (Sallie Mae). This variation in responsibilities and statutory authority has raised issues about the government's ability to assure the safe and sound operation of the GSEs, and has sparked efforts to reform their supervision and regulation. This chapter explores general strategies for reform and the issues they raise.

ELEMENTS OF SUPERVISION OF SAFETY AND SOUNDNESS

Supervision of safety and soundness is not unique to GSEs. Federal and state agencies are responsible for supervising the safety and soundness of several other types of firms that provide financial services--depository institutions, insurance companies, pension funds, and broker-dealers.[1] In each case, the objective is to help liability holders to avoid the adverse consequences of the insolvencies of institutions. For example, state supervision seeks to prevent insolvencies of insurance companies and pension funds in order to protect life insurance beneficiaries, property and casualty insurance claimants, and present and future pension recipients, for whom the cost of monitoring the risk of these entities is high.

The objective of federal supervision of the safety and soundness of GSEs is most similar to the objective of the supervision of depository institutions. In both cases the government is protecting itself as the ultimate guarantor of the institution's liabilities. This objective is a means to achieving other important social goals at an acceptable cost. The federal government insures deposit accounts, which are the major means of payment in the economy, at banks and thrifts to protect small depositors and to prevent the runs that can follow insolvencies. Supervision of depository institutions protects the government as the deposit insurer. Similarly, the federal government implicitly guarantees GSE obligations so that the enterprises can raise funds cheaply and easily to achieve their public purposes. The government can use supervision of GSEs to protect itself as the implicit guarantor of GSE obligations.

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[1] A framework for understanding supervision of the safety and soundness of all types of financial services firms is developed in Lawrence J. White, "The Theory of Financial Regulation in the New Environment of Liberalization" (paper presented at "Recent Developments in Finance: Conference in Honor of Arnold W. Sametz," October 5, 1990). The framework is applied to depository institutions in Lawrence J. White, *The S&L Debacle* (New York: Oxford University Press, 1991), Chapters 10 and 11.

Because supervision of the safety and soundness of depository institutions and of GSEs have very similar objectives, the elements of supervision of banks and thrifts can be used to analyze existing federal supervison of the GSEs and to define alternative approaches. Specifically, the elements of federal supervision of depository institutions are the supervisory agency's institutional capacity, its mandate to ensure safety and soundness, and its statutory authority to carry out that mandate.[2] The remainder of this section examines each element in detail.

Institutional Capacity

Institutional capacity includes the ability to hire, train, and retain a competent and professional staff that can understand the activities and techniques of risk management of the financial institution being supervised and of similar firms, and that can directly represent the government in litigation. The Congress has assured that the bank and thrift regulatory agencies have sufficient institutional capacity by authorizing the agencies to assess regulated institutions and allowing them to set their own staffing ceilings and salaries, outside the civil service salary structure, and to determine the size of their budgets. The cost of insulating the agencies from normal budgetary controls is arguably worth the benefit of avoiding any unnecessary government losses that might result from inadequate supervision.

A GSE supervisory agency must compete for personnel not only with the bank regulatory agencies, but also with the enterprises and other financial institutions that provide similar services, such as Wall Street investment banking firms. To compete successfully for financially sophisticated staff, the agency may have to be able to pay more than the bank regulatory agencies pay senior federal bank examiners.

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[2] The discussion draws upon Thomas H. Stanton, *Federal Supervision of Safety and Soundness of Government Sponsored Enterprises* (prepared for the Administrative Conference of the United States, December 4, 1990), pp. 38-82; and White, "The Theory of Financial Regulation in the New Environment of Liberalization," pp. 20-23. For complementary analyses of the elements of supervision of the safety and soundness of depository institutions, see Carter H. Golembe and David S. Holland, *Federal Regulation of Banking 1986-87* (Washington, D.C.: Golembe Associates, Inc., 1986), Chapters 4, 11, and 12; and Federal Deposit Insurance Corporation, *Deposit Insurance in the Nineties: Meeting the Challenge* (Draft Staff Study, January 4, 1989), Chapter 5.

Another approach would be to establish separate grades for GSE supervisory personnel within the civil service salary structure.

Statutory Mandate

A statutory mandate to supervise the safety and soundness of a financial institution is a statement of the agency's responsibility to protect the government from risk of loss. This mandate may be explicitly stated or implicit in various provisions of law and in legislative history. The safety and soundness mandate of the federal bank and thrift regulatory agencies may be inferred from the legislative history of their enabling statutes, their statutory responsibility to protect the deposit insurance funds, and their powers to enforce federal capital requirements and other limits on risk taking.

Failing to give a GSE supervisory agency a clear statutory mandate to assure an enterprise's safety and soundness, or to clarify the importance of achieving this objective before obtaining programmatic goals, carries the risk that the agency will pursue programmatic objectives while ignoring excessive exposure to risk. The pattern of HUD's regulation of Fannie Mae in the 1970s, discussed in detail in Chapter IV, illustrates this risk.

Statutory Authority

The statutory authority of a supervisor of the safety and soundness of a financial institution may have several components. The Federal Deposit Insurance Corporation (FDIC), the Office of the Comptroller of the Currency (OCC), and the Office of Thrift Supervision (OTS) can require financial disclosure and reporting and can examine the books and records of federally insured depository institutions, set binding capital requirements on them, enforce those requirements and other restrictions on risk, and appoint a conservator or receiver for a failing institution.

Reporting and Examination. The bank and thrift regulatory agencies require depository institutions to file regular reports of financial condition and use the reports to monitor changes in risk. Agency examiners perform regular examinations of institutions in order to verify the accuracy of reported information and to assess any exposure to management and operations risks.

Bank and thrift examiners use CAMEL ratings to summarize the overall safety and soundness of banks. They rate each institution's ***C***apital adequacy, ***A***sset quality, ***M***anagement quality, the quantity and quality of its ***E***arnings, and its ***L***iquidity. These five factors are not strictly separate. A bank's capital adequacy, for example, depends on its ratings on the other factors. Examiners rate each factor on a scale of one to five, with one being the most favorable. The five ratings are then combined into a single, composite rating of the bank's overall risk.

Capital Requirements. The Congress has set a statutory minimum capital requirement for federally insured thrifts of 3 percent of assets. The OCC requires all federally insured banks to comply with the same standard, which protects the government against each institution's exposure to interest rate, management, and operations risks.

The bank and thrift regulatory agencies also have authority to set binding capital standards on insured depository institutions. By the end of 1992, the regulatory agencies will have fully phased in risk-based capital requirements that are consistent with international agreements among bank regulators known as the Basle Accords. The standards protect against each institution's exposure to credit risk. They apply risk weights to different classes of assets and require institutions to maintain book-value capital equal to a percentage of total risk-weighted assets. The regulators reserve the right to impose higher capital requirements on an institution if examinations reveal special risks such as rapid growth, concentration in a single kind of loan, or geographic concentration.

Enforcement Powers. The bank and thrift regulators have several types of enforcement powers. These include the ability to revoke an institution's charter or terminate federal insurance of its deposits, issue directives requiring it to increase its capital, order a firm to cease and desist from unsafe and unsound practices, remove an institution's officers and directors for good cause, impose civil monetary penalties on the firm, restrict its payment of dividends, and disapprove risky activities.

Authority to Appoint a Conservator or Receiver. The agencies also have authority to appoint a conservator or receiver for an insured depository institution. A conservator administers the affairs of an institution once it is determined to be operating in an unsound manner and seeks to restore it to financial health. A receiver administers the affairs of an institution that has been closed. The receiver takes possession of (but not title to) the institution's assets, liquidates or otherwise disposes of them, and uses the proceeds to pay creditors.

ADAPTING FEDERAL SUPERVISION TO THE UNIQUE CHARACTERISTICS OF GSEs

Government-sponsored enterprises and federally chartered depository institutions are privately owned financial institutions created by the government to achieve public purposes. There are significant differences, however, in the lending powers, operations, size, and geographic scope of the two types of institutions. Depository institutions can make more kinds of loans than can individual GSEs, but they usually make loans in more limited geographic areas. Individual banks and thrifts also purchase only a small fraction of the number of loans financed by some GSEs. Depository institutions number in the thousands, but there are only a few enterprises. The GSEs are not exposed to the liquidity risk that depository institutions face. Finally, some of the enterprises can provide the government with highly sophisticated and potentially quite accurate measures of their exposure to credit risk and interest rate risk. Some depository institutions may also be able to do this.

These important differences suggest that the elements of federal supervision of banks and thrifts must be adapted to take into account the unique characteristics of GSEs in order to define alternative reforms of current federal supervision of the enterprises that would limit the government's exposure to risk. This section considers several approaches. They include options to rely on increased federal oversight and the ability to remove GSE boards of directors, require that supervision of low-risk GSEs be streamlined, select the enforcement powers given to a supervisory agency and address its use of those powers, and specify the steps that a supervisory agency would take if a GSE was insolvent or near insolvency. Because the Farm Credit Administration and the Federal Housing Finance Board already possess substantial statutory authority, the options apply principally to supervision of Fannie Mae, Freddie Mac, and Sallie Mae. A different strategy for limiting the government's exposure to risk--privatization--is discussed later in this chapter.

Relying on Federal Oversight and Early Warning

A minimalist approach to reforming supervision of the three GSEs that have publicly traded stock outstanding--Fannie Mae, Freddie Mac, and Sallie Mae--would rely on the discipline of stockholders and federal monitoring of their activities to protect the government. The Department of Housing and Urban Development, in the case of the first two enterprises, and the Treasury Department, in the case of Sallie Mae, would use their existing statutory authority to examine each GSE's strategic plans and annual budgets and business plans, and to monitor its financial condition on the basis of publicly available data. If either department detected planned or actual changes in risk, it could alert the President and the Congress. HUD and the Treasury could also recommend to the President that the board of directors of a GSE be removed, if the secretary of either department found that the enterprise was increasing its risk significantly or beginning to incur losses.

This option would minimize the risk that federal supervision of these three GSEs would impose unnecessary burdens on them. There are a number of objections to the approach, however. First, monitoring by the Treasury or HUD might not detect changes in the risk of the GSEs until they had occurred, especially if the changes had not been planned. Although management would seem to have strong incentives not to initiate unplanned increases in risk, they might do so if they expected sufficiently high returns. Second, each GSE is exposed to management and operations risks, namely, the danger that management weaknesses or operating deficiencies will damage the enterprise's financial condition significantly without the harm showing up on the balance sheet. It seems unlikely that the Treasury or HUD could limit the government's exposure to these risks without the institutional capacity and statutory mandate and authority to examine each GSE thoroughly and take action to be sure that problems detected in examinations are corrected. Third, this approach would not impose any federal capital requirements or adopt any other risk-related performance yardstick by which to assess the risk of these three enterprises. Although private credit ratings could provide such a yardstick, they would have some shortcomings, as discussed below. Fourth, the departments and the President might be reluctant to remove the board of a GSE, especially if increased risk taking had not led to losses. In contrast, a supervisory agency with a statutory mandate to ensure the safe and sound operation of the enterprises and sufficient enforcement powers would probably be less reluctant to act to protect the government. The burdens of such supervision could be minimized by streamlining the supervisory process.

Streamlining Supervision of Low-Risk GSEs

The analysis in this report suggests that two GSEs--the FHLB system and Sallie Mae--expose the government to very little risk. Fannie Mae and Freddie Mac are found to be relatively well capitalized with respect to their exposure to credit risk and interest rate risk. Their consistent profitability and the incentives provided by their publicly traded stock suggest that they probably do not have any serious management weaknesses or operating deficiencies at this time.

If a supervisory agency concluded that the risk posed by any of these enterprises was acceptably low, the Congress could require the agency to take steps to make its monitoring less burdensome than is the federal government's supervision of banks and thrifts. Specifically, the Congress could direct the agency to streamline the regulatory reporting and disclosures and the federal examinations of a GSE--or, in the case of the FHLB system, of individual banks--if the agency determined that it posed a low level of risk to the government. A streamlined supervisory process could take the following form. The supervisory agency would require a GSE to disclose its credit and interest rate risk by reporting the application of financial models and stress tests to its activities. The agency would specify the models and tests after consulting with the enterprise, assure itself that they were updated as necessary, and employ a variety of techniques to validate them. Validation would also include conducting on-site examinations to assure that data were timely and accurate. Alternatively, the supervisory agency could perform its own stress tests, in consultation with the GSE, and simply require the enterprise to provide the data necessary to run the tests.

The GSE would be required to provide the supervisor with annual business plans, updated quarterly and whenever material departures from the plans were contemplated. The business plans could be accompanied by analyses, performed using agreed-upon models, of the consequences of the business plans for the GSE's credit risk, interest rate risk, and capital position, and would indicate how the enterprise planned to capitalize any new activities. The regulator would be free to request additional information about the GSE's risks and business plans, and to indicate whether it would require greater capitalization than the GSE planned for new activities. If so, the enterprise could decide, based on market conditions and its desired rate of return, not to engage in the activities. The supervisory agency might also institute special reporting requirements or examinations to assure that, as new activities were carried out, their risk was not substantially greater than initially projected.

This approach to reporting and disclosure would allow the regulator's examination procedures to become more sophisticated and less exhaustive than those of federal bank and thrift regulators. The examiners would be able to concentrate on evaluating the adequacy of the GSE's management systems and practices and on testing whether a GSE's financial models were conceptually sound and accurately reflected the characteristics and performance of the enterprise's assets and liabilities (or in validating data provided to enable the agency to run its own stress tests).

If such a streamlined approach were used, two issues would require active attention by the supervisory agency. First, the models that the GSE or the agency used would have to be adjusted continually as markets and financial knowledge changed. The regulator would require the legal authority to obtain accurate and complete information about any models and techniques used by the enterprise, the technical capacity to evaluate them, and the ability to require the GSE to furnish the data necessary to run any stress tests of its own. Second, if a GSE suffered losses that brought it out of compliance with its federal capital standard--whether intentionally or as a result of adverse economic conditions--the regulator might conclude that streamlined self-reporting and limited examinations were no longer sufficient and take steps that would signal an end to streamlined supervision. The Congress could provide the agency with the institutional capacity and statutory authority to institute more extensive examinations and more detailed monitoring of the GSE at that point. The supervisor could also be given powers to enforce its capital standards or other financial requirements and to stop an enterprise from engaging in any significant unsafe and unsound practices that it detected. The selection of enforcement powers is addressed below.

A supervisor that chose to apply this streamlined regulatory scrutiny to a GSE would require a flexible institutional capacity. On the one hand, the agency probably would require a far smaller staff, but much more extensive computer capabilities, than the bank regulatory agencies need to supervise the average depository institution. On the other hand, the agency would need to have an arrangement with the bank regulatory agencies to borrow examiners if a GSE got into trouble and required closer scrutiny in short order. Some of the agency's examiners probably would have to possess experience assessing the management quality of large money-center banks.

There are several reasons not to require the Farm Credit Administration to devise a streamlined supervisory process for the member institutions of the Farm Credit System (FCS). The system's institutions make many different types of agricultural loans, the terms of which vary. Consequently, the FCA must use bank-type examinations, in which the quality of individual loans or small numbers of similar loans is evaluated, to assess the risk exposure of nearly all FCS institutions. Market prices or their equivalents are not available on a large proportion of the system's loans, which limits the usefulness of market value accounting. Finally, when the FCA has used credit stress tests to assess capital adequacy, it has tested each association and bank separately, rather than the system as a whole. It would seem prudent, therefore, to continue to delegate to the agency the ability to decide to streamline supervision of individual institutions.

A streamlined supervisory process might be appropriate for the individual FHLBs, particularly if the banks retained current capital levels, collateral requirements for advances, and procedures for managing exposure to interest rate risk. If the system's capital was significantly reduced, however, the FHFB would have to weigh the potential benefits of less burdensome supervision against the potential dangers posed by the combination of less intensive monitoring and increased exposure to risk.

Selecting and Limiting the Use of Enforcement Powers

With the exception of the Farm Credit Administration and the Federal Housing Finance Board, federal agencies do not have extensive enforcement powers over the GSEs. If one or more of the agencies were given additional explicit powers, it might not be necessary to give them all the powers of the bank and thrift supervisors. The ability to issue cease and desist orders, issue capital directives, and remove officers or directors who failed to comply with either type of mandate would probably suffice. These powers would imply a variety of less draconian and implicit enforcement tools, such as letters of agreement, and would give a GSE supervisory agency sufficient leverage to deter or stop excessively risky activities or unsafe and unsound practices.

In granting explicit enforcement powers to a GSE supervisory agency, the Congress could use statutory language or legislative history to be reasonably sure that the agency would not abuse the powers and that the enterprise could anticipate how they would be used. To prevent abuses, the Congress might want to direct the agency to use the powers only to address safety and soundness concerns, and to prohibit their use to promote programmatic objectives. The supervisory agency could also be required to issue regulations that defined certain conditions that it would consider to be unsafe and unsound practices. These conditions would be considered grounds for seeking a cease and desist order or applying other specific sanctions. Of necessity, the agency would have to retain the authority to act in other cases as well, even if the offending practices had not been defined beforehand. Without such flexibility, its ability to correct previously unforeseen practices that it deemed to be unsafe and unsound would be compromised.

Considerable care would have to be taken in writing legislative language and history to avoid undue restriction or ambiguities that would result in the courts rather than the Congress determining the scope of the enforcement powers of a GSE supervisory agency. Another approach would be to rely on the protections against arbitrary actions provided in the Administrative Procedure Act, supplemented by a requirement that judicial review be offered to enterprises against whom enforcement actions are taken.

Dealing with an Insolvent GSE

Dealing with a GSE that is insolvent or near insolvency is more complex than handling a failed depository institution. The Congress chartered each enterprise to serve particular loan markets on a nationwide basis and is likely to want to assist one that would not be viable without assistance, rather than allow a supervisory agency to liquidate it. This approach suggests that the Congress might want to give a supervisor of the safety and soundness of a GSE authority to appoint a conservator for an enterprise that was insolvent or near insolvency, but not authority to appoint a receiver. A conservator could be directed to continue any of the GSE's operations, such as financing fixed-rate residential mortgages with mortgage-backed securities, whose risks are known with a reasonable degree of accuracy. The supervisor could be required to submit, within a predetermined period after a conservator was appointed, a plan for recapitalizing or otherwise lowering the risk of the enterprise.[3]

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[3] The argument for limiting the supervisory agency's authority to the appointment of a conservator does not apply to the Farm Credit System, since sound institutions generally are available to lend in the geographic areas previously covered by an association or bank that is being liquidated by a receiver.

Determining when a GSE is insolvent or close to insolvency and whether to appoint a conservator or receiver are complex and somewhat subjective judgments. In determining solvency, a supervisor must take into account the GSE's capital measured on a GAAP (Generally Accepted Accounting Principles) basis, its mark-to-market net worth, and its franchise value--the value of intangible assets and all current and future business opportunities. A GSE's special benefits under federal law can make its franchise value quite substantial. The supervisory agency must assess whether the risk of harming that source of value would be minimized by appointing a conservator or by allowing current management to continue to operate the enterprise. If adverse economic conditions rather than management failure had caused a GSE's losses, the agency might decide that the drastic step of conservatorship was unnecessary.

The advantage of giving a supervisory agency the power of conservatorship rather than relying on the legislative process to deal with a failing GSE is that swift action might prevent the enterprise from increasing the risk of its activities in order to gamble its way back to financial soundness. Even if severe economic conditions had caused the problem and the government was willing to provide financial assistance, such action might be prudent to protect the government from having to absorb additional losses. If serious management errors had caused the problem, conservatorship probably would not do much more damage to the GSE's franchise value.

PRIVATIZATION AS AN ALTERNATIVE TO ENHANCED SUPERVISION

The owners of a stockholder-owned GSE might find privatization of the enterprise more attractive than any change in current federal oversight. The certain cost of losing the legal benefits of government sponsorship and the enhanced ability to borrow afforded by an implicit federal guarantee, as well as the certain benefit of being able to expand into other lines of business, might be preferable to the risk that federal supervision might be poorly informed and, therefore, impose unnecessary burdens on the GSE.

The Congress might find this option attractive if genuine privatization--a separation that increased competition in the market in which the GSE participates--can be achieved and the government's exposure to risk truly reduced, and if fully private financial institutions can achieve the public purposes for which the enterprise was established. These conditions may exist for Sallie Mae. Chapter VI, therefore, examines one approach to privatizing the GSE.

USING PRIVATE ASSESSMENTS OF GSE RISKS TO MINIMIZE THE POSSIBILITY OF SUPERVISORY FAILURE

Government supervisors of the safety and soundness of financial services firms sometimes fail to protect the interests of taxpayers. In the thrift crisis, for example, officials failed to do so by permitting insolvent, federally insured savings and loans to remain in business and by allowing mounting losses to go unrecognized. A GSE supervisory agency could fail in a similar fashion by allowing an enterprise to engage in very risky activities or poor management practices, by neglecting to publicize that a GSE had suffered significant losses and was out of compliance with federal capital requirements, by failing to require it to recapitalize, or by allowing an enterprise that was insolvent or close to insolvency to increase its risk exposure in an effort to gamble its way back to health.

A general strategy for minimizing the risk of supervisory failure would be to obtain independent private assessments of the financial condition and overall exposure to risk of each GSE. Three approaches, which are not necessarily mutually exclusive, could be taken.

Requiring Reproducible Federal Reports on GSE Risk Exposure and Capital Adequacy

The Congress could require the federal agency responsible for supervising the safe and sound operation of a GSE to issue a quarterly or semiannual report containing its quantitative assessments of the enterprise's exposure to credit risk and interest rate risk and its capital adequacy. If market prices for the GSE's assets or similar financial instruments are easily obtained, the agency would be required to disclose the enterprise's mark-to-market net worth. The GSE would also be required to make publicly available the empirical data that it had provided to the agency on which the assessments were based. Interested analysts would also be able to obtain, for a fee, copies of the computerized and statistical models used by the agency.

The purpose of disclosing this information would be to enable private and governmental analysts outside the supervisory agency to reproduce and to evaluate the agency's assessments of the GSE's exposure to credit risk and interest rate risk and its capital adequacy.[4] These analysts would be able to discover and publicize quickly any major weaknesses in an agency's techniques or any failure to disclose a significant decline in its performance on a stress test or its mark-to-market net worth. The possibility of independent review would give the supervisory agency a strong incentive to use the best possible methods and to report any significant changes in risk exposure in a timely manner. This incentive would exist even if private or other governmental analysts did not regularly attempt to reproduce the agency's findings.

This option would require regular disclosure to the public of proprietary information that the GSEs currently keep confidential. The data would include, for example, summary information on the characteristics of the loans purchased by an enterprise in each region of the country in each year, how each group of assets has performed in each year, and the average prices that the GSE has charged and is expected to charge for its services. No information on how the enterprise sets prices or on the terms of specific transactions need be disclosed.

The release of such information could cause the price of a GSE's stock to fluctuate or even put it at a competitive disadvantage. These risks could be minimized by requiring all the enterprises to release the mandatory information simultaneously. Each GSE would also be free, of course, to accompany the data with disclosures that explained any potentially troubling developments to analysts and investors.

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[4] The genesis of this idea is Edward J. Kane, "Reforming Regulatory Incentives: Banks, Thrifts, and GSEs" (paper presented at "A Crisis in Values: Real Estate and the Financial System," conference sponsored by the National Taxpayers Union, February 11, 1991).

Alternatively, the Congress could establish procedures by which a supervisory agency and the GSEs for which it was responsible regularly informed private consultants or the General Accounting Office (GAO) about the methods and empirical data on which it based its assessments. The private firms or GAO would be required to attempt to reproduce the agency's quantitative assessments, to evaluate its findings, and to report to the agency or to the Congress. The cost of hiring the private firms or creating a staff within GAO to perform this function would make this alternative more expensive than simply disclosing publicly the methods used by the agency and the data provided by the GSEs.

Quantitative methods can be used to assess the risk exposure of the Farm Credit System in only the most general way. An alternative approach would be to give private firms or the GAO access to, and ask them to evaluate the results of, the Farm Credit Administration's most recent examinations of individual FCS institutions. (GAO already has authority to audit them.) Because of the large number of institutions, however, they would have to be studied selectively or only on a periodic basis. The cost of doing so could be higher than the expense of using private firms or GAO to evaluate quantitative assessments of the risks of the other GSEs.

Using Credit Ratings to Assess the Government's Exposure to GSE Risks

Private credit-rating agencies specialize in assessing the default risk of debt and asset-backed securities issued by private firms and state, local, and national governments (see Box 4). The Treasury has proposed that the agencies be hired to provide credit ratings that would indicate the government's exposure to the risks of GSEs.[5] Some analysts have raised questions, however, about whether the agencies could use the methods they employ to rate the default risk of fully private debt, the information value of ratings that assessed the govern-

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[5] Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises* (May 1990), p. 9.

BOX 4
The Private Credit-Rating Process

Private credit-rating agencies evaluate the default risk of debt and asset-backed securities issued by private firms (including financial institutions), states and municipalities, and sovereign governments. The agencies define the term "default" as an event in which a debtor fails to make a scheduled payment to a creditor. There are five agencies--Moody's Investors Service, Standard & Poor's Corporation (S&P), Duff & Phelps Credit Rating Co., Fitch Investors Service, and McCarthy, Crisanti, and Maffei. Moody's and S&P are the industry leaders. These firms exist because investors often lack the experience, resources, or capacity to analyze the default prospects of individual debt securities effectively and at low cost. Issuers pay the agencies to evaluate their ability to meet their obligations.

The agencies assign letter ratings that indicate the relative default risk of the securities and are comparable for all types of issuers and obligations. Ratings for senior debt securities range from triple-A, the highest, to single-C, the lowest. Securities that receive the top four ratings--triple-A, double-A, single-A, and triple-B--are known as investment grade, and securities rated double-B to single-C are known as noninvestment grade. Numbers, or pluses and minuses, are used to distinguish different degrees of creditworthiness among obligations with the same letter rating. Thus, a security rated Aa3 (or AA-) is superior to a debt rated A1 (or A+). Investors take the ratings into account when deciding the prices they will pay for the securities when they are first issued and then traded in the secondary market.

In assigning a credit rating to a security, the agencies assess various factors that will affect the issuer's ability to make all payments of principal and interest in a timely fashion over the life of the obligation. For a financial institution, these factors include the firm's industry risk and market strategy, the credit quality of its assets, its projected earnings and cash flow, its liquidity and financial flexibility, its capitalization, its exposure to interest rate risk, and the quality of its management. These factors are similar to those that the federal bank and thrift regulatory agencies evaluate to assign CAMEL ratings to federally insured depository institutions.

To analyze exposure to interest rate risk and the adequacy of capital, an agency may simulate the firm's cash flows over the life of the obligations being rated to assess the probability that revenues will be sufficient to cover expenses, and the amount of shortfalls that may occur. It may also analyze historical data to evaluate how much capital a financial institution has relative to the credit quality of its assets. To combine quantitative assessments with its evaluation of qualitative factors into a rating, an agency must make a judgment call, relying on its experience in evaluating a large number of similar financial institutions.

The rating agencies provide ratings for each specific debt issue, but all debt of a specific type issued by a firm--all its subordinated debt, for example--receives the same rating. The agencies monitor the financial condition and risk of firms that have issued debt and the performance of asset-backed securities to determine if changes in the obligations' ratings are appropriate. The ratings of all senior obligations issued by a corporation are reevaluated whenever the firm issues additional debt or significant new information is available, and at least annually.

ment's exposure to a GSE's risk, and whether obtaining ratings would impose costs on the enterprises.

Using Methods of Rating Agencies to Assess the Government's Exposure to Risk. Credit ratings of debt securities issued by private firms are ordinal indicators of the relative risk that issuers will default--that is, fail to make scheduled payments in a timely fashion--and of the amount of likely default losses. Default risk exists if a firm may fail to have sufficient cash to meet its obligations and be unable to raise additional funds by selling assets or issuing debt. Creditors will not lend a firm money to pay interest or retire debt if they expect that the firm will not be able to pay them back. The firm will be able to repay if it can generate revenues that exceed expenses. If creditors do not expect that it will be able to do so, they will refuse to lend the firm more money, and it will default.

Because of the implicit federal guarantee, investors in GSE obligations are subject to minimal default risk. Instead, each enterprise exposes the government to the risk that it may fail to earn enough money to be able to meet its obligations without either borrowing on the strength of the implicit federal guarantee or receiving federal assistance. This risk is essentially the same as the default risk to which a fully private firm exposes its creditors.

In assigning a credit rating to an issuer's obligations, the rating agencies must make assumptions about the consequences of a decline in its financial condition. In most cases, they must simply assume the likely responses of creditors. Other situations present subtler issues. For example, in evaluating the default risk of the obligations of depository institutions, particularly money-center banks, the rating agencies give significant weight to the protection offered by governmental support. They make assumptions about the nature and timing of federal action to assist a failing institution and the probability that losses would be imposed on creditors. Similarly, at the request of a parent firm, the agencies will provide privately a rating that indicates the risk to which a wholly owned subsidiary exposes the firm. To formulate this rating, the agencies must assume how the parent firm would respond to a deterioration in the subsidiary's financial condition.

To assess the risk that a GSE poses to the government, the agencies would have to assume how the government would respond to a decline in its financial condition. The simplest assumption would be that the government would take no action before an enterprise became incapable of meeting its obligations without borrowing or requiring federal assistance. Although the government might not actually behave this way in practice, the assumption would enable the agencies to assess the government's exposure to risk. This assumption would be equivalent to assuming, in the case of a fully private firm, that creditors will force it to default only when it no longer has the capacity to pay its bills without borrowing.

Information Value of Credit Ratings. Credit ratings that indicated the government's exposure to a GSE's risks would have advantages and disadvantages as sources of information about the enterprises. Three positive features should be noted. First, the rating agencies have considerable experience in assessing the overall risk of financial institutions that engage in lines of business similar to those of the GSEs. These institutions include portfolio lenders that hold agricultural and home mortgage loans, private mortgage insurers, and issuers of private-label, mortgage-backed securities. The agencies can readily adapt to the GSEs the techniques they use to assess the default risk posed by such firms. Second, the agencies would probably be independent of the legislative and supervisory processes and have little stake in their outcome. They also could lose business if they gave a prominent enterprise a high rating that its subsequent performance called into question. Third, the agencies specialize in making judgments about the overall risk of debt issuers.

On the negative side, the methods that the rating agencies use are tailored to match the needs of investors who hold diversified portfolios of rated debt securities and who, therefore, do not have a large stake in any particular issuer. The quantitative techniques they use to assess exposure to credit risk and, especially, interest rate risk are less sophisticated than those used by several GSEs. The rating agencies base their assessments of a firm's exposure to management and operations risks on a relatively small number of meetings with its senior management and other officials. This contrasts with the practice of the

Office of the Comptroller of the Currency, which maintains a staff to conduct continuous examinations at each of the money-center banks.

Further, research suggests that credit ratings of debt issued by fully private firms may be lagging indicators of changes in the default risk of the debt. Some studies have found that investors react to non-rating financial data and adjust the prices of bonds traded on the secondary market before publication of changes in ratings.[6] Such evidence would suggest that the rating agencies do not have significantly better information than investors. Other studies, however, have found that ratings are one factor among many that can affect bond prices, and thus provide additional information about a firm's financial health. Even in those cases, however, the market's reliance on ratings was found to decrease as the time from a bond's last rating increased.[7]

Another concern about credit ratings is that the market prices of enterprise obligations would not provide an independent check on the judgment of the agencies. The prices of publicly traded debt that the rating agencies have evaluated provide market tests of the ratings. If an agency rates a corporation's debt triple-A but the debt trades like single-A in the market, the agency will have an incentive to reevaluate the risk of the firm and revise its rating. Conversely, if the corporation's debt is rated single-A but trades like triple-A, the firm will have an incentive to provide information to the rating agency to justify a higher rating. Because GSE obligations would continue to benefit from an implicit federal guarantee, their market prices would not fully incorporate information provided by the rating agencies about changes in the government's exposure to default risk. The absence of the same degree of market discipline of the rating process could affect the rating agencies' performance, although they would have their reputations at stake.

The institutional structure of the Farm Credit System should be taken into account in assessing the value of credit ratings that would indicate the government's exposure to the risk of the system. The significant differences in risk of individual Farm Credit System institutions and districts and questions about the effectiveness of arrangements to share losses among them cast doubt on the utility of a single measure of the system's overall risk.

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[6] See, for example, Mark I. Weinstein, "The Effect of a Rating Change Announcement on Bond Price," *Journal of Financial Economics* (December 1977), pp. 329-350.

[7] See, for example, Louis H. Ederington, Jess B. Yawitz, and Brian E. Roberts, *The Informational Content of Bond Ratings* (National Bureau of Economic Research Working Paper No. 1323, April 1984).

Costs of Ratings. The dollar cost of purchasing ratings from the agencies would be small. However, the existence of two ratings of a GSE's obligations--one indicating the default risk to investors, and the other indicating the government's exposure to risk--might lead investors to raise somewhat the yields they required on the enterprise's securities. This could affect the GSE's earnings, but also might provide some additional market discipline. It is uncertain whether any possible effect of two ratings could be distinguished from other factors that affect GSE debt yields.

Requiring the GSEs to Issue Risky Subordinated Debt

The government could also obtain private assessments of each GSE's overall risk by requiring the enterprises to issue subordinated debt that did not carry an implicit federal guarantee and, therefore, exposed investors to the risk of default. Market prices of such debt would provide indicators of the government's relative exposure to each GSE and of changes in that exposure. Two types of obligations have been proposed: subordinated income bonds and puttable (redeemable) subordinated debt.[8] Both types of securities would have a junior claim on an enterprise's assets and could be repaid only after other debts with a senior claim, including any loans by the Treasury, had been repaid. The obligations would differ from the subordinated debt now issued by some GSEs in that strict loan covenants would lead investors to expect to incur losses under certain clearly defined conditions. The government would have to be sure that an enterprise was satisfactorily capitalized before it issued such subordinated debt. Otherwise, the GSE would have to pay high rates on the debt, which would reduce its ability to increase its capital.

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[8] Requiring GSEs to issue subordinated income bonds is discussed in Edward L. Golding, "Regulating the Secondary Mortgage Market," *Secondary Mortgage Markets* (Federal Home Loan Mortgage Corporation, Fall 1990), pp. 3-6. Requiring enterprises to issue puttable subordinated debt has been proposed in James F. Gatti and Ronald W. Spahr, "The Burden of Government Sponsored Enterprises: The Case of the Federal Home Loan Mortgage Corporation" (mimeograph, February 19, 1991), pp. 40-41. For a similar plan for federally insured commercial banks, see Larry D. Wall, "A Plan for Reducing Future Deposit Insurance Losses: Puttable Subordinated Debt," *Economic Review* (Federal Reserve Bank of Atlanta, July/August 1989), pp. 2-17.

Subordinated Income Bonds. Investors in subordinated income bonds issued by a GSE would receive scheduled interest payments only if the enterprise's net income was positive in a recent period--say, in each of the two previous quarters. The government could vary how much of the market value of the bonds was at risk by varying the interest rate and maturity of the securities. The market prices of such debt would provide private assessments of the probability of the enterprise's having a negative net income. An agency charged with supervising the safety and soundness of a GSE could take changes in the prices and ratings into account in determining how closely to monitor the enterprise. The changes also would serve as an "early warning system" for other observers.

Requiring GSEs to issue subordinated income bonds as a means of assessing the enterprises' risk poses several practical obstacles. One difficulty is that the Internal Revenue Service might decide that interest payments on the debt were equivalent to dividends on preferred stock, which would prevent the GSEs from deducting the payments as operating expenses and raise the cost of issuing the bonds. The Congress could resolve that issue in legislation. Moreover, to assure a liquid market, each GSE would have to issue a fairly large amount of the bonds--perhaps $2 billion or more. If the amount of subordinated income bonds each GSE issued was not large enough to assure a liquid market, the market prices of the obligations might not provide reliable private assessments of enterprise risks.

Puttable Subordinated Debt. Under a puttable subordinated debt option, each GSE would be required to issue subordinated debt in an amount that was a fixed percentage--2 percent, for example--of all the assets it had financed. The loan covenants governing the debt would specify that it would be worthless if a GSE fell out of compliance with its federal capital requirement (either a risk-based capital requirement imposed by a supervisory agency or a statutory minimum standard).[9] Investors in the debt would have an option to put, or redeem, their investment at any time before its scheduled maturity date. They would have a strong incentive to monitor changes in the risk of the GSE. A failure by the enterprise to issue sufficient subordinated debt within a specified period to replace any obligations put to it would signal to investors that the enterprise was not in compliance with its capital standard, and that they stood to lose their investment in any newly issued subordinated debt as soon as the government discovered the capital shortfall. Mandatory supervisory enforcement actions could be required at that point. Unless the GSE failed to issue enough puttable subordinated debt, the market prices of such debt would provide private assessments of the risk of each GSE that could be used in the supervisory process. Although illiquidity might reduce the information value of the prices, the exercise of put options and the requirement that a GSE issue new debt would provide unambiguous information about investors' assessments of risk.

Advantages and Disadvantages of the Proposals. If practical problems could be solved, GSE subordinated income bonds and puttable subordinated debt would have two advantages as a means of obtaining private assessments of the risks of the enterprises. First, because investors in the debt would be exposed to default risk, the government would have a market-based check on potential bias in assessments by credit-rating agencies of the default risk the government bears. Second, both types of securities would reduce the government's exposure to risk and, thereby, the cost of the implicit federal guarantee of each GSE's senior obligations. Each enterprise's financing costs would increase, however, which could affect the borrowers it serves.

The government could allow an enterprise to count either type of debt as capital for the purpose of assessing compliance with a federal capital requirement, since investors in the debt would absorb GSE losses before the government. If interest payments on such debt were deductible as operating expenses, the enterprises might prefer to issue it in order to comply with a capital requirement.

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[9] Another option would be to specify that the debt would convert to equity. Under either approach, the duration of the GSE's liabilities would be uncertain. The enterprise could hedge this risk by paying other parties to sell it puttable assets.

Both options would share the shortcoming that private investors must base their decisions to buy and sell GSE securities on publicly available measures of financial condition that follow Generally Accepted Accounting Principles. GAAP capital and related measures tend to be lagging indicators of problems at financial institutions, including the enterprises. This difficulty could be partially overcome by adopting the first option for obtaining private assessments of risk discussed above, and requiring each enterprise to disclose the empirical data that its supervisory agency used to assess its exposure to risk and the adequacy of its capital.

Information Contained in GSE Stock Prices. Changes in the risk of the three GSEs that have publicly traded stock--Fannie Mae, Freddie Mac, and Sallie Mae--cause the prices of the stock to fluctuate. The fluctuations convey information about investors' perception of the risk of each enterprise's earnings. If the GSE's overall risk is quite low, as is Sallie Mae's, the fluctuations arguably convey much of the information that the government could obtain from the prices of subordinated income bonds or puttable subordinated debt. For higher-risk GSEs, this argument is not as compelling, since the interests of stockholders and the government diverge more.

Evaluating the Options

The strengths and weaknesses of each approach to obtaining private assessments should be evaluated relative to those of specific federal supervisory arrangements. For example, a supervisory agency that thoroughly examined an enterprise on an ongoing basis, learned its techniques for measuring and managing risk, and developed its own stress tests, if appropriate, could develop a more sophisticated understanding of the GSE's exposure to risk than either a private credit-rating agency or investors in subordinated debt that did not carry an implicit federal guarantee. Private assessments could still be valuable, however, if there were significant concerns about whether the agency would achieve such an understanding. Thus, if a supervisory agency had a vague statutory mandate, poor institutional capacity, limited statutory authority, or programmatic objectives that distracted it from or conflicted with the objective of safety and soundness, it could allow a GSE to increase its risk exposure significantly. In that case, the government might want to use one or more of the three types of private risk assessments to minimize this possibility.

PROGRAM REGULATION OF GSEs

In general, the Congress may give a GSE program regulator three types of responsibilities. First, a regulator may have a duty to assure that an enterprise's activities are authorized by law. To discharge this responsibility, the regulator must interpret the GSE's charter, monitor its operations, and be able to order it to cease any unauthorized activities.

A second responsibility is to make sure that a GSE achieves the public purposes set forth in its charter. To fulfill this responsibility, the charter may require the regulator to approve new programs proposed by the enterprise, and to disapprove those that the regulator finds will not further the GSE's ability to achieve its public purposes.

A third responsibility is to assure that a GSE devotes specific amounts of resources to Congressionally mandated activities. In the two cases in which the Congress has given a federal agency this duty, the regulator's discretion has been restricted in statute. Specifically, HUD has authority to require Fannie Mae and Freddie Mac to devote a reasonable amount of their mortgage purchases to the goal of providing adequate housing for low- and moderate-income families, but the purchases must generate a reasonable economic return to the GSEs. The latter restriction should prevent HUD from requiring Fannie Mae and Freddie Mac to invest in mortgages that do not meet their underwriting standards or that carry below-market interest rates. Similarly, the Federal Housing Finance Board is required to assure that the FHLB system devotes resources to affordable housing, but the amounts are limited by law.

CREATING A NEW AGENCY TO SUPERVISE AND REGULATE ALL GSEs

One general strategy for reforming federal supervision of GSEs would be to alter the institutional capacity and the statutory mandate and authority of the federal agencies that now oversee the enterprises. Chapters III through VI discuss various options that are consistent with this strategy.

A very different strategy would centralize supervision of all GSEs in a single federal agency.[10] An existing bank or thrift regulatory agency could assume this responsibility. Significant conflicts of interest can arise between some of the enterprises and depository institutions or their federal regulators, however. For example, agricultural banks compete directly with member institutions of the Farm Credit System. Fannie Mae, Freddie Mac, and the bank and thrift regulators have different views about the treatment of depository institutions' income from servicing mortgages sold to the GSEs for the purpose of determining compliance with federal capital requirements. Such conflicts strongly suggest that assigning the task of supervising the enterprises to a bank or thrift regulatory agency would be unwise.

A more feasible option would be to establish an independent agency headed by a board of directors. The chairman of the board would be a private citizen appointed by the President and approved by the Senate. The Secretary of the Treasury and the Chairman of the Federal Reserve Board would also be voting members. The Secretaries of Agriculture, Education, and HUD would be nonvoting members, who could express their views when the board considered capital requirements and other issues that would affect borrowers in particular sectors. The agency would be given adequate institutional capacity and statutory authority to ensure the safe and sound operation of each GSE, and a statutory mandate to do so. It also would be given the authority to regulate programs that HUD now possesses with respect to Fannie Mae and Freddie Mac, and that the FHFB has over the FHLBs. One division of the agency would examine and supervise the

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[10] A centralized supervisor of all GSEs was first proposed in Ronald C. Moe and Thomas H. Stanton, "Government-Sponsored Enterprises as Federal Instrumentalities: Reconciling Private Management with Public Accountability," *Public Administration Review* (July/August 1989), pp. 321-329.

Farm Credit System, since FCS member institutions are primary lenders. Another division would handle Farmer Mac and the other GSEs that engage in secondary market operations. The FCA and the FHFB would become part of the new agency, and HUD would no longer have a direct role in supervising Fannie Mae and Freddie Mac.

Two principal arguments can be made for creating such an agency. First, the agency would have greater responsibility, would be accountable to a broader range of interests, and could be more visible than are the existing agencies that oversee GSEs--HUD, the FCA, and the FHFB--at least in their supervisory capacities. The voting members of the new agency's board would be primarily responsible for protecting the interests of the general taxpayer, who arguably is most interested in preventing any particular GSE from imposing losses on the government. The board would also be ultimately accountable for losses that any of the five GSEs actually imposed on the government in the future. The breadth of its mandate could make its activities more visible than those of the separate agencies that now are responsible for one or two GSEs. In combination, these factors would minimize the possibility that one or a pair of the enterprises could dominate the decisions of, or capture, the agency's board.

Second, there are some similarities in the activities of the GSEs that provide support to lenders--Farmer Mac, Fannie Mae, Freddie Mac, the FHLBs, and Sallie Mae. Centralizing responsibility for examining and supervising these enterprises in a single agency would eliminate some duplication of personnel and other resources.

The principal argument against this option is that a single agency might not be able to develop sufficient expertise in housing, higher education, and agriculture to supervise all the GSEs effectively at the same time. The agency might also focus principally on the three largest enterprises--Fannie Mae, Freddie Mac, and the FHLB system--which serve the housing finance system, and not become sufficiently familiar with lending to agriculture and students. A failure to develop adequate expertise could lead the agency to adopt a standardized approach to monitoring and establishing capital requirements that would fail to account adequately for the differences among the GSEs. Merging the FCA into a centralized agency would give it significant expertise in agricultural finance, however. The agency could also be required to streamline the supervisory process for GSEs that it determined exposed the government to a sufficiently low amount of risk, in order to minimize their regulatory burden. The Congress could also limit the supervisory agency's discretion in setting capital standards, as discussed below.

The objection may also be raised that the new agency's board would not be sufficiently independent, since the Secretary of the Treasury could seek to represent the policy objectives of the Administration in office, rather than the interests of the general taxpayer. This risk could be addressed by having the board consist solely of private citizens appointed by the President, with the consent of the Senate.

ISSUES IN SETTING FEDERAL CAPITAL REQUIREMENTS FOR GSEs

The Congress could improve federal supervision of the GSEs' safety and soundness by imposing new capital requirements on one or more of the enterprises, or by revising the processes by which federal agencies responsible for supervising their safety and soundness set capital requirements for the GSEs. At present, three GSEs have federal capital standards. The FCA is phasing in minimum risk-based capital requirements for Farm Credit System institutions that are similar to the risk-based standards imposed on federally insured banks. The Federal Home Loan Bank Act and FHFB regulations impose capital standards on the FHLB system as a whole. The charters of Fannie Mae and Freddie Mac set a ceiling on the ratio between the assets that each GSE holds in portfolio and its regulatory capital, which includes subordinated debt and reserves to cover loan losses. Because these restrictions ignore each enterprise's mortgage-backed securities, the government cannot use them to control the two GSEs' exposure to risk.

A principal purpose of a federal capital requirement for a GSE is to give management an incentive to limit risk to the minimum necessary to achieve the enterprise's public purposes. To accomplish this objective, a capital requirement must have three attributes. First, the requirement must be based on risk. The enterprise must know that the government will require it to increase (decrease) its capital if it increases (decreases) the riskiness of its operations. A capital standard for a GSE that was not risk-based would not enable the government to control its exposure to risk as effectively as a risk-based one. Unless competition from fully private firms was strong, the enterprise might be able to pass on the cost of complying with a standard that was not related to risks in its prices and thus maintain its rate of return on equity, leaving its owners with no additional incentive to limit risk taking. Second, a risk-based capital requirement must reflect all three elements of a GSE's overall risk: credit risk, interest rate risk, and management and operations risk. Third, a standard must enable the supervisory agency to tell the enterprise in advance the amount of capital that new business will require, so that the GSE can set prices and decide whether to pursue investment opportunities in a businesslike manner.

If the Congress decided to impose new capital requirements for GSEs or revise existing ones, questions would arise about the appropriateness of statutory minimum capital standards, whether and how the Congress should limit supervisory discretion in setting risk-based capital requirements, the treatment of management and operations risks in setting risk-based standards, whether and how to set comparable requirements for the three housing GSEs, and the economic effects of requiring GSEs to maintain higher capital than they would maintain on their own. The remainder of this section analyzes these issues.

Establishing Statutory Minimum Capital Standards

The Congress could set a statutory minimum capital requirement for each GSE equal to a flat percentage of all assets financed by the enterprise. Like the 3 percent minimum requirement for banks and thrifts, a minimum standard would not vary with risk. Thus, it would not create the incentives to manage risk prudently that a well-designed, risk-based standard could provide. Instead, its purpose would be to erect a floor under any risk-based capital requirement for the GSE. Under current law, the FHLB system is subject to a minimum capital requirement. The system must maintain capital equal to at least 8⅓ percent of its outstanding consolidated obligations.

A statutory minimum capital requirement would protect the government against a GSE's exposure to management and operations risks, which cannot be measured with precision, and against errors in supervisory judgment in setting risk-based capital requirements. For GSEs that are exposed to significant interest rate risk or that issue a substantial amount of financial guarantees, it would be most useful to express a minimum requirement in terms of mark-to-market net worth and the market values of all assets financed. The Congress could delegate to the supervisory agency the responsibility for defining appropriate standards for determining a GSE's mark-to-market net worth.

The principal objection to setting in statute a minimum capital standard for a GSE is that the supervisory agency might be unable to impose a higher risk-based capital requirement if it believed doing so was necessary to protect the government. This problem could be avoided by delegating the choice of the specific amount to the agency. Mandating a period for public comment on proposed regulations would offer protection against the risk that the agency would set an excessively high minimum standard.

Limiting Supervisory Discretion in Setting Risk-Based Requirements

If the Congress gave a supervisory agency the authority to set a risk-based capital requirement for a GSE, it might want to limit the agency's ability to set a standard that was excessive. One option would be to allow the enterprise to reach a "safe harbor" if two credit-rating agencies gave it an acceptably high rating that indicated the government's exposure to the risk of a default. Under this approach, the crucial judgment would be the choice of a minimum rating.

Moody's Investors Service has investigated the default rates of corporate bonds with different credit ratings. Table 4 displays the average 10-year cumulative default rates of issuers rated by Moody's that had bonds outstanding in the 1970-1981 period. The rates are the average percentages of issuers in each rating category on January 1 of those years that defaulted in the next 10 years. The data indicate that the risk of default is significantly lower for investment-grade bonds

TABLE 4. AVERAGE 10-YEAR CUMULATIVE DEFAULT RATES FOR CORPORATE BONDS RATED BY MOODY'S INVESTORS SERVICE, BY RATING CATEGORY (In percent)

Rating	Bonds Rated by Moody's and Issued 1970-1981[a]
Investment Grade	
Aaa	0.4
Aa	0.6
A	1.0
Baa	3.8
Noninvestment Grade	
Ba	11.3
B	24.2

SOURCE: Congressional Budget Office based on Moody's Investors Service, *Corporate Bond Defaults and Default Rates, 1970-1990* (New York: Moody's Investors Service, January 1991).

a. Default rates are the percentages of issuers in each rating category on January 1 of a year that defaulted during the next 10 years.

than for noninvestment-grade debt. As the ratings of investment-grade bonds improve, the most significant reduction in risk occurs between triple-B (which Moody's terms Baa) and single-A.[11]

Using credit ratings to create a "safe harbor" from federal capital requirements would make it difficult for the supervisory agency to tell an enterprise in advance the amount of capital that a new line of business is likely to require. As discussed above, the information value of ratings that indicate the government's exposure to a GSE's risk is somewhat limited. It would be appropriate, therefore, to require thorough federal examinations of the enterprise to assure that its exposure to management and operations risk was low. Additional protection could be obtained by establishing triple-A or, perhaps, double-A as the minimum rating that would be acceptable.

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[11] Research on corporate bonds rated by Standard & Poor's and issued in 1971 through 1987 has found similar average 10-year cumulative default rates. See Edward I. Altman, "Measuring Corporate Bond Mortality and Performance," *The Journal of Finance*, vol. 44, no, 4 (September 1989), pp. 909-922.

Alternatively, the Congress could outline in general terms one or more stress tests that a supervisory agency would use to assess a GSE's exposure to credit risk or interest rate risk, and indicate how long the enterprise would be required to survive each test. Chapter IV discusses in detail the advantages and disadvantages of taking this approach to limiting HUD's discretion in setting a risk-based capital standard for Fannie Mae and Freddie Mac. These arguments apply to the other GSEs as well.

Including Management and Operations Risks in a Risk-Based Capital Standard

Deciding how much capital to require to protect the government against a GSE's exposure to management and operations risks is a difficult judgment call. One option, discussed above, is to establish a statutory minimum capital requirement for the enterprise. Another option is to include a component for management and operations risks in a risk-based capital requirement.

One approach would be to allow a supervisory agency to require capital equal to a specific percentage of all the assets financed by a GSE. Giving the agency this flexibility would recognize that the assumptions of any stress tests, particularly about how the enterprise would behave, are uncertain. It also would recognize that the GSE's management and operating systems could deteriorate enough to cause financial losses to accumulate without showing up on its balance sheet as a decline in capital. But the agency could set a management and operations risk component that was quite high, thereby imposing a significant additional cost on a GSE that performed well on stress tests. One way to mitigate this cost would be to allow the enterprise to comply with this portion of the capital standard by issuing subordinated debt that exposed investors to risk. If interest payments on the debt were tax deductible, issuing it would be cheaper than raising capital by issuing stock.

Another approach would be to set a ceiling on the amount of capital that a supervisory agency could require a GSE to maintain to protect the government against its exposure to management and operations risk. This option could force the agency to monitor and examine the enterprise much more closely, which could impose significant costs on the GSE. Also, the agency would have to rely on enforcement powers to require changes in the management and in the operating systems of an enterprise that it found to be deficient. It is not clear that these tools could be used to protect the government more or less effectively than could the flexibility for an agency to use its best judgment in setting the management and operations component of a capital requirement.

Establishing Comparable Capital Standards for the Housing GSEs

As discussed in Chapters IV and V, Fannie Mae and Freddie Mac hold much less capital than the FHLB system, even though the system has lower exposure to risk than the other two. This difference means that FHLB advances provide a smaller implicit federal subsidy to lenders that borrow from the system than do Fannie Mae and Freddie Mac's purchases of the mortgages they are eligible to buy. This is one factor contributing to the ability of the latter two GSEs to dominate the market for conventional mortgages, particularly fixed-rate loans. Other important factors include their economies of scale and other operating efficiencies, the inefficiencies of some depository institutions, and the federal capital requirements for depository institutions, which since 1989 have favored the securitization of home mortgages.

Setting comparable federal capital requirements for these three GSEs would eliminate the disparity in the implicit federal support that each provides to the lenders they serve. It would increase the profitability of thrifts and other lenders that use FHLB advances and would be a step toward enabling them to compete on an equal footing with Fannie Mae and Freddie Mac in the market for financing conventional mortgages.

The government could set comparable capital standards for the three GSEs by imposing a uniform minimum requirement, or by requiring them to have enough capital to pass the same credit and interest rate stress tests and to maintain comparable amounts of capital to cover their exposure to management and operations risks. Making the capital standards comparable could involve lowering the capitalization of the FHLB system, raising the capitalization of Fannie Mae or Freddie Mac, or both. A choice about the appropriate level of capitalization would be a judgment about the relative risks and benefits of these GSEs. Of course, even if comparable standards were imposed, the enterprises could end up with different amounts of capital as a percentage of assets, since their exposure to credit risk and interest rate risk differs (as may their exposure to management and operations risks).

Economic Effects of Federal Capital Requirements

If government capital standards required a GSE to maintain more capital than it would maintain on its own, the enterprise could respond by limiting the financing of loans it accepted, by raising the prices or fees it charged, or by accepting lower returns on equity. If the GSE's ability to raise its prices were limited by competition from wholly private financial institutions or another GSE, it would lose market share to them, which would limit the benefits the enterprise provides to the borrowers and lenders it serves. But higher capital standards would also reduce the government's exposure to risk.

CHAPTER III

FARM CREDIT SYSTEM

The Farm Credit System (FCS) is a specialized lender for the agricultural sector. The system differs from other GSEs in three important respects. First, while the other enterprises maintain secondary loan markets or serve other financial institutions, the FCS primarily makes loans directly to individual borrowers. Second, the FCS is the only GSE that is supervised by an agency with powers similar to those of the federal bank regulators, is subject to minimum risk-based capital standards, and finances a federal insurance fund. Finally, the FCS is more dependent on the financial well-being of a single sector of the economy than are the other GSEs.

When agriculture experienced a serious downturn in the mid-1980s, the FCS suffered considerable losses. The Congress responded to the FCS's losses by authorizing up to $4 billion in financial assistance, requiring extensive changes in the structure of the system, and changing the authority of its supervisor, the Farm Credit Administration (FCA). Some of these changes are just beginning to be put in place. The substantial recent changes in the structure of the FCS make it difficult to provide a definitive assessment of the risk inherent in the system.

The analysis in this chapter will show that the system is in much better financial shape today than it was three or four years ago but that portions of the system remain extremely vulnerable to an economic downturn in agriculture. Further, its single-sector orientation and the statutory restrictions on its activities make the FCS a greater risk to the government than the other GSEs--even though it has fewer assets than all but the Student Loan Marketing Association (Sallie Mae).

THE FARM CREDIT SYSTEM IN THE AGRICULTURAL FINANCE SYSTEM

The Congress created the FCS to improve the supply of credit to agriculture. The system has evolved over time to reflect the changing needs of agriculture.

Public Purposes and Activities of the FCS

The FCS is a multitiered, federated cooperative with about 275 member institutions organized in 12 districts that cover every state and Puerto Rico.[1] Like all cooperatives, the FCS is owned by its members. The objectives of the FCS have been to improve farmers' and ranchers' access to credit markets, to increase farmers' control over their credit supplies, and to provide a competitive yardstick against which commercial agricultural lenders can be measured.

The FCS is the largest lender in agricultural real estate. In addition, the system provides production credit for farmers, finances rural housing, and is a major source of credit for agriculturally oriented cooperatives. The FCS has recently been granted authority to provide credit to rural municipalities for the construction of sewer and water facilities.

Historical Development and Performance

The Farm Credit System has evolved over its nearly 75-year history from focusing mainly on farm real estate lending to providing credit for a wide variety of agricultural and agriculturally related needs (see Box 5 on pages 72 and 73). Loans made by the system increased dramatically after World War II, but the returns it earned in those years were relatively low.

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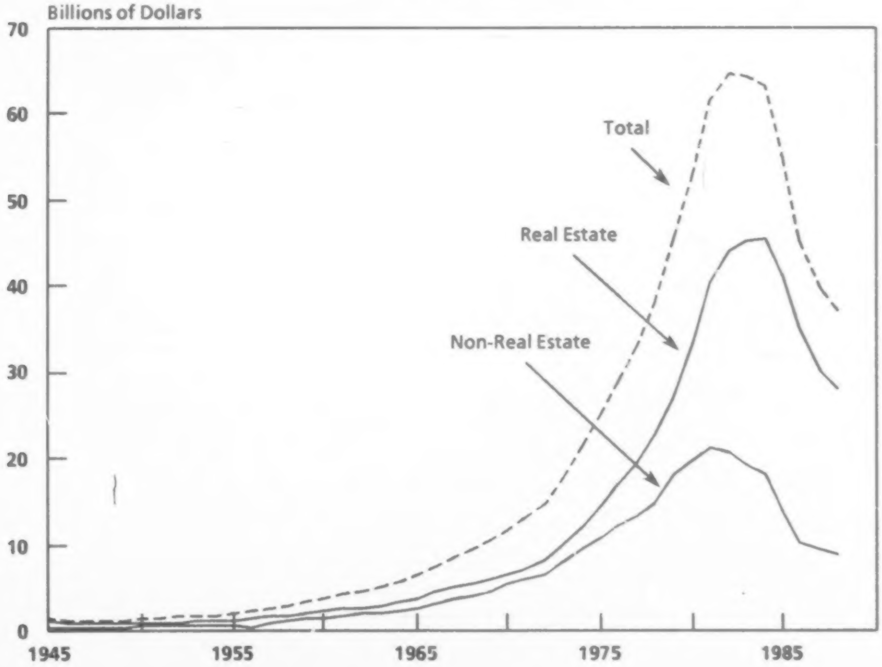
[1] A federated cooperative is one in which the members are other cooperatives. For example, in the FCS the Farm Credit Banks are owned by the FCS's local-level cooperative associations.

Historical Development. The initial components of the system were created between 1916 and 1933. The Federal Land Banks (FLBs) were chartered in 1916 to correct a lack of credit markets serving farmers, and to encourage the development of agriculture in the United States. The Congress created 12 district FLBs to finance long-term real estate loans to agriculture. These loans were originated and serviced at the local level by Federal Land Bank Associations. After 1923, each of the 12 districts also had a Federal Intermediate Credit Bank (FICB). The FICBs were initially designed to be intermediaries between commercial banks wishing to make farm production loans (for the purchase of nonland inputs such as seeds, fertilizer, or machinery) and national

Figure 1.
Lending by the Farm Credit System, 1945-1988



SOURCE: Congressional Budget Office using data from the Farm Credit System.

NOTE: Excludes lending by the Banks for Cooperatives.

BOX 5
Current Organizational Structure and Ownership of the Farm Credit System

The Farm Credit System is a multitiered, federated cooperative that is national in scope. The current institutional structure of the FCS is quite complex, with a greater variety of types of institutions within the individual districts than before 1987, and the potential exists for substantial further changes.

The FCS now has 262 associations. These fall into four different types, each with a different set of authorities. The type with the most comprehensive authority is the Agricultural Credit Association, which can make and hold both production loans and land acquisition loans. Federal Land Credit Associations are authorized to make and hold farm real estate loans. Production Credit Associations are limited to making and holding short- and intermediate-term loans for the acquisition of production inputs such as seeds, chemicals, or machinery. Finally, Federal Land Bank Associations make and service real estate loans that are ultimately shown on the balance sheet of a Farm Credit Bank.

At the district level, 11 districts have a Farm Credit Bank (FCB). FCBs were formed from the merger of district Federal Land Banks and Federal Intermediate Credit Banks. The Jackson district still has a Federal Intermediate Credit Bank because the Federal Land Bank in that district was placed into receivership in 1988. The St. Paul and Springfield districts each have a Bank for Cooperatives, holdovers from the pre-1987 era when each district had a Bank for Cooperatives. The National Bank for Cooperatives (CoBank), formed in 1989, is the result of merging the other 10 district Banks for Cooperatives and the Central Bank for Cooperatives. CoBank and the two remaining Banks for Cooperatives have authority to lend nationwide.

At the national level, the system has a number of specialized institutions. The Farm Credit Leasing Services Corporation provides leasing services to producers and to agricultural and other rural cooperatives. The Farm Credit System Financial Assistance Corporation (FAC) sells bonds guaranteed by the federal government that are used to assist financially strapped system institutions. Authorization to sell these bonds is given by the Financial Assistance Board, which is a federal agency, and is predicated on acceptance by the board of a financial recovery plan for the affected institution. The board will cease to exist at the end of 1992. The FCS is responsible for repayment of all FAC bonds, as well as Treasury payments of interest on the debt or to cover any defaults.

BOX 5

The FCS raises its funds not from deposits (as a commercial bank would) but from bond and note sales on national capital markets. The system has a single seller of debt securities, the Federal Farm Credit Banks Funding Corporation, headquartered near New York City. Securities issued by the FCS are the joint and several liabilities of the district banks and Banks for Cooperatives. This means that should a bank be unable to meet its obligations to its bondholders, all other banks in the system are jointly and severally liable for the bonds in question.

Finally, the Federal Agricultural Mortgage Corporation, commonly known as Farmer Mac, is nominally part of the FCS. While Farmer Mac is regulated by the system's supervisor, the Farm Credit Administration, it is covered neither by joint and several liability nor by the system's federal insurance fund.

Farm Credit System Organization
(System Regulator--Farm Credit Administration)

Local

Federal Land Bank Associations

Production Credit Associations

Federal Land Credit Associations

Agricultural Credit Associations

District

Farm Credit Banks
- Springfield
- Baltimore
- Columbia
- Louisville
- St. Louis
- St. Paul
- Omaha
- Wichita
- Texas
- Western
- Spokane

Federal Intermediate Credit Bank--Jackson

National

Banks for Cooperatives
- CoBank
- St. Paul
- Springfield

Federal Farm Credit Banks Funding Corporation

Farm Credit Leasing Services Corporation

Farm Credit System Financial Assistance Corporation

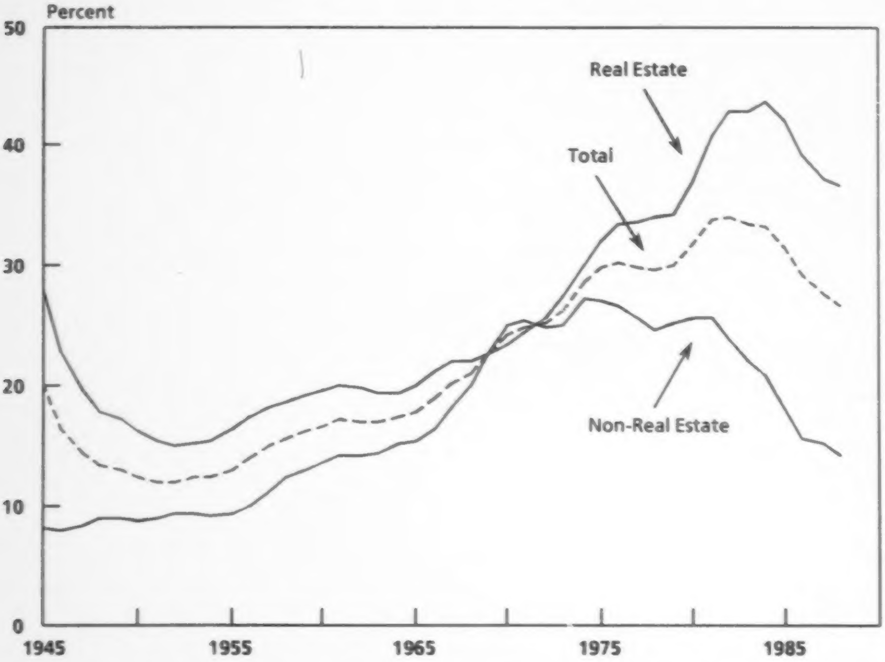
Federal Agricultural Mortgage Corporation capital markets. By 1933 this arrangement was judged a failure, and Production Credit Associations (PCAs) were created to provide the FCS with local offices through which to make production loans. The Banks for Cooperatives (BCs) were also created in 1933. BCs, as the name suggests, make loans to agricultural cooperatives, as well as rural utilities and other eligible entities.

Historical Performance. As Figure 1 on page 71 indicates, the growth in outstanding loans held by the FCS has been quite dramatic since 1945. Loans outstanding in 1945 at the FICBs, PCAs, and FLBs totaled slightly more than $1.3 billion. The FLBs accounted for more than $1.1 billion of the total. By 1990, gross loan volume, excluding loans made by the BCs, was $41.4 billion. At its peak in 1982, the FCS (less the BCs) had $64.5 billion in loans outstanding to farmers.

The growth in lending by the FCS was only slightly greater than the growth in total debt held by farmers. In nominal terms, farm debt held by the FCS was about 27 times greater in 1988 than in 1945, while total farm debt had increased slightly less than 21 times over the same period. Because total indebtedness by farmers has increased dramatically since World War II, the market share of the FCS has not increased as dramatically as has loan volume. As shown in Figure 2, the FCS's market share grew from a low point in the early 1950s of about 12 percent of total farm lending to a peak of 34 percent in 1982, and declined to 26.6 percent by 1988.

The financial health of the FCS, as measured by returns on assets, is depicted in Figure 3. Return on assets is defined as pretax income divided by total assets. Over the period 1960 to 1983, the return on assets for each of the main portions of the system--Federal Land Banks, Federal Intermediate Credit Banks, the Banks for Cooperatives and the Central Cooperative Bank, and the Production Credit Associations--was consistently positive but relatively low. The return on assets averaged about 0.5 percent for the FLBs, about 0.7 percent for the FICBs, about 0.8 percent for the PCAs, and about 1.4 percent

Figure 2.
Market Share of the Farm Credit System, 1945-1988



SOURCE: Congressional Budget Office using data from the Farm Credit System.

for the BCs. As a cooperative, the FCS has objectives other than maximizing returns on assets.

Causes of the System's Decline in the 1980s

After many decades of profitability, the financial condition of the FCS deteriorated sharply in the 1980s. The system lost $4.6 billion in 1985 through 1987. Several external and internal factors combined to cause this dramatic reversal of fortune.[2]

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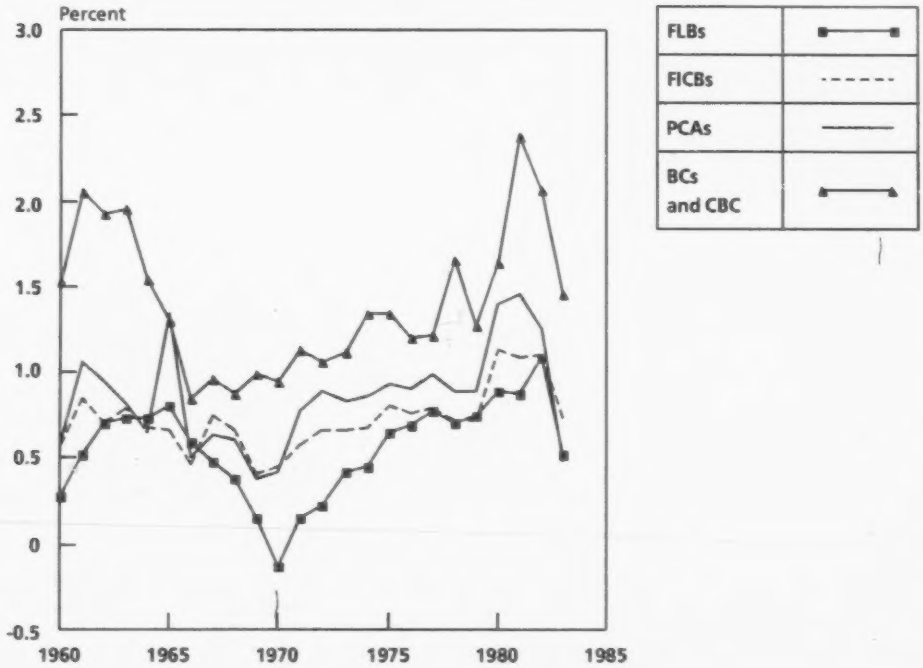
[2] The FCS was not the only agricultural lender that suffered financial setbacks during the 1980s. Commercial banks, insurance companies, and the Farmers Home Administration also experienced sharp decreases in income from agricultural lending and, subsequently, increases in loan write-offs.

A key external factor was the relatively deep recession of 1982 and 1983, caused in part by an unanticipated move by the Federal Reserve to a deflationary monetary policy. At the same time, the value of the dollar increased quite dramatically. Slower rates of worldwide economic growth, coupled with the higher-valued dollar, resulted in lower agricultural exports from the United States. Because the FCS lends primarily to agriculture, its financial performance depends on that sector's economic health.

Figure 3.
Return on Assets of the Major Components of the Farm Credit System, 1960-1983



SOURCE: Congressional Budget Office using data from the Farm Credit Administration.

NOTE: FLBs = Federal Land Banks; FICBs = Federal Intermediate Credit Banks; PCAs = Production Credit Associations; BCs = Banks for Cooperatives; CBC = Central Bank for Cooperatives.

These external factors would not, by themselves, have been expected to result in the magnitude of losses experienced by the FCS in the mid-1980s. Several FCS policies contributed significantly to this outcome. Like most agricultural lenders at that time, the FCS, exclusive of the BCs, practiced asset-based lending, at least in a de facto sense. Asset-based lending means that real estate loans were based more on the current or expected value of the asset backing the loan--land--than on the expected income-generating potential of that asset. Because agricultural land values had increased almost without interruption since World War II, and because land was seen as a good hedge against inflation, it was felt that asset-based lending posed very little risk to the lender. As noted, the FCS was not alone in practicing asset-based lending. However, because it was the dominant lender in the agricultural real estate market, the FCS had the greatest exposure when that market went into a tailspin.

The internal factor that probably contributed most to the financial woes of the FCS in the mid-1980s was the system's practice of basing interest rates on the average cost of funds. It was felt that this practice posed little risk, since few of the system's loans had fixed interest rates. When the cost of funds is rising, average-cost pricing conveys a price advantage over competitors who base their loan rates on the current rates they have to pay for funds. During the late 1970s and early 1980s, the FCS's practice of average-cost pricing gave it a pricing advantage over other agricultural lenders, and its portfolio grew quite rapidly. Interest rates were extremely high during this period, and the FCS made the mistake of issuing a substantial amount of long-term debt to finance its burgeoning portfolio. Once issued, most system bonds are not callable. Noncallable bonds generally pay lower interest rates than comparable callable bonds because the seller of noncallable bonds does not have the discretion of simply paying off any remaining indebtedness and retiring a bond issue.

In contrast, during periods of falling interest rates, average-cost pricing means that loan rates are higher than those available from lenders using marginal cost pricing. When interest rates fell in the 1980s, the system's use of average-cost pricing, combined with the significant mismatch between the maturities of its assets and liablities, meant that loans from the FCS carried rates that were often considerably higher than those offered by its competitors. This interest rate differential led many borrowers to pay down their debt or refinance it through other lenders. When debt was paid down or refinanced, the system was left with a good deal of long-term, high-cost, noncallable bonds on which it had to pay interest, and a weakened demand for loans, which competitors could make at lower rates.

Legislative Responses to the System's Financial Problems

The Congress passed legislation addressing the problems of the FCS in 1985, 1986, and 1987. The 1985 legislation eliminated the FCA's ability to determine the system's operating policies, transforming it into an arm's-length supervisor of the safety and soundness of the FCS. The 1985 act also attempted to formalize loss-sharing agreements between FCS districts and required all FCS institutions to have an annual outside audit. In 1986, the system was given authority to use alternative accounting rules to forestall recognition of losses. By 1987, it was apparent that those legislative attempts to fix the problems of the FCS were going to be inadequate. The Agricultural Credit Act of 1987 made more extensive changes. It reformed the structure of the system, created the Farm Credit System Financial Assistance Corporation, established an insurance fund for the FCS, endorsed the practice of charging differential interest rates, and required the FCA to set and enforce minimum capital standards. The law also established the Federal Agricultural Mortgage Corporation to guarantee securities backed by agricultural mortgages and to create a secondary market for such securities. Each of these changes is discussed below.

System Consolidation. The 1987 act changed the institutional structure of the FCS by:

- Creating the Farm Credit Banks (FCBs) by merging the Federal Land Bank and Federal Intermediate Credit Bank in each district. There are now 11 FCBs.[3]

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[3] The Federal Land Bank in the Jackson district was placed in receivership in 1988. Authority to make real estate loans in the Jackson district has been transferred to the Texas Farm Credit Bank.

- Permitting the merger of Production Credit Associations and Federal Land Bank Associations at the local level. These merged institutions, called Agricultural Credit Associations (ACAs), have direct lending authority and offer their members both short-term and long-term loans.

- Permitting the conversion of Federal Land Bank Associations to Federal Land Credit Associations, which have direct lending authority for real estate loans only.

- Permitting the Central Bank for Cooperatives and the 12 district Banks for Cooperatives to merge. All but two of the district BCs joined with the Central Bank for Cooperatives to form CoBank. The BCs in the St. Paul and Springfield districts have retained their individual identities. All three BCs have authority to lend anywhere in the nation.

- Suggesting that 12 district banks were no longer needed and that the system should examine the feasibility of reducing the number of districts from 12 to no fewer than 6. While a number of mergers have been discussed, none has yet taken place.

The FCS Financial Assistance Corporation and Board. In order to provide the assistance needed to ensure the survival of the FCS, the 1987 act created the Farm Credit System Financial Assistance Corporation (FAC). The Farm Credit System Financial Assistance Board (FAB), which holds authority over the sale of FAC bonds, is a federal agency. The board consists of the Secretaries of Agriculture and the Treasury and a representative of the agricultural sector. The FAC is authorized to issue up to $4 billion of 15-year bonds for assistance to FCS institutions--the interest and principal being guaranteed by the government. To qualify, an institution applying for assistance must submit a recovery plan that is approved by the board. The FAB authorizes the FAC to issue bonds and to use the proceeds to purchase preferred stock in the assisted institutions. Once bonds are issued, the federal government pays all interest for the first five years, half of the interest in years six through ten, and none thereafter. The FCS is responsible for the remaining interest, for the principal amount when due, and for the eventual repayment of interest previously paid by the government. To date, $1.3 billion of FAC bonds have been sold, $0.4 billion to pay back capital preservation agreements executed among system institutions before 1987 (the FCS is responsible for all interest on this portion of the debt). Current CBO projections indicate that total sales should be less than $2.5 billion by the time FAC's bond-issuing authority expires at the end of fiscal year 1992. Analysis suggests that some districts may have difficulty repaying their obligations to FAC.

The FCS Insurance Corporation. The 1987 act created an insurance fund for the system, which is managed by the Farm Credit System Insurance Corporation. The board of the Insurance Corporation comprises the members of the FCA board, and is chaired by a member other than the FCA board's chairman. The act established a target minimum balance for the fund, known as the secure base amount, equal to 2 percent of total outstanding system liabilities or whatever amount the Insurance Corporation might deem necessary to ensure the actuarial soundness of the fund. Until the secure base amount is reached, premiums are to be calculated as a function of the volume of accruing loans (loans on which payments are expected to be made in full and on time) and nonaccruing loans (loans on which payments are not expected to be made in accordance with the contract terms) on the books of member institutions. The 1987 act called for premium payments to begin in 1990 based on the volume of accruing loans at the close of 1989 and, starting in 1991, on the basis of both accruing and nonaccruing loans at the close of 1990. Nonaccruing loans have a higher premium rate than accruing loans. Because the Insurance Corporation is a federal agency, the insurance fund is an on-budget account and its assets are federal funds. As of the end of 1990, $438 million had accrued in the fund. After 1992, the money in the insurance fund will be available to assure the timely repayment of principal and interest owed to investors in FCS securities.[4]

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4. The accounting treatment of the insurance fund has generated controversy between the system, which currently treats it as a restricted asset on its combined financial statement, and the Farm Credit Administration, which does not believe it should be considered an asset since the system does not have control over it.

Differential Interest Rates. Until the 1987 act, most FCS institutions [illegible] one rate of interest for each type of loan. A beginning farmer and a farmer who had been an active member of the FCS for 20 years without any delinquencies paid the same rate of interest on their loans. To be sure, the amount the FCS would be willing to lend to these two hypothetical borrowers might well differ. The 1987 act endorsed the practice of differential pricing based on the riskiness of lending to different borrowers but required the FCS, upon request, to justify the rates charged. Currently, most districts and associations practice differential pricing.

Additional Responsibilities for the Farm Credit Administration. The 1987 act completed the transformation of the FCA into a full-fledged, arm's-length supervisor of the safety and soundness of the system. The act also required the FCA to set interim and final minimum capital requirements for each institution in the FCS. The FCA set the minimum permanent capital standard at 7 percent of the amount of risk-adjusted assets, but the FCA may require a given institution to maintain a greater percentage. Because of their central importance to the ability of the FCS to withstand cyclical downturns in the farm economy, capital standards will be discussed in a subsequent section.

The Federal Agricultural Mortgage Corporation. The Federal Agricultural Mortgage Corporation (Farmer Mac) is part of the FCS, but it does not participate in the joint and several liability of other institutions for the system's consolidated obligations. This means that if Farmer Mac gets into financial trouble, the other components of the FCS have no liability to its creditors, and vice versa. Farmer Mac is also not covered by the insurance fund. The purpose of Farmer Mac is to increase the access of agricultural lenders to national capital markets. Loans for agricultural real estate and rural housing that satisfy the underwriting standards established for Farmer Mac are collected by institutions called poolers, which issue securities backed by the loans. Farmer Mac provides a guarantee of securities representing no more than 90 percent of the principal balance of the loans in the pool. In most cases, the poolers, or the institutions originating the loans, will have to keep the 10 percent of the securities backed by the pool that are not guaranteed (and are subordinated) or establish a reserve equal to

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TABLE 5. CONSOLIDATED BALANCE SHEETS AND INCOME STATEMENTS FOR THE BANKS AND ASSOCIATIONS OF THE FARM CREDIT SYSTEM, BY DISTRICT, YEAR-END 1990 (In millions of dollars)

	Farm Credit Banks and Related Associations						
	Springfield	Baltimore	Columbia	Louisville	St. Louis	St. Paul	Omaha
Balance Sheet							
Assets							
Accruing Loans[a]	1,696	3,113	3,986	3,512	3,226	5,418	3,518
Nonaccruing Loans	23	39	182	132	244	473	237
Other Assets[b]	444	563	1,287	415	564	1,270	694
Less Loan Loss Reserves	-40	-37	-155	-74	-117	-240	-213
Total	2,122	3,677	5,301	3,985	3,917	6,920	4,237
Liabilities and Capital							
System Liabilities	1,882	3,221	4,510	3,440	3,417	6,219	3,764
Capital at Risk							
Retained earnings	164	337	601	309	340	252	199
At-risk stock	76	111	37	223	21	259	117
Subtotal	240	448	638	532	361	511	316
Protected Stock	0	9	152	12	138	190	157
Total	2,122	3,677	5,301	3,985	3,917	6,920	4,237
Income Statement							
Net Interest Margin	51	79	147	127	101	138	95
Other Income[c]	7	5	18	11	11	29	6
Operating Expenses	-44	-60	-74	-69	-67	-94	-46
Insurance Payments	-3	-5	-6	-6	-5	-9	-6
Provisions for Loan Losses	-3	-1	-6	30	3	26	-0
Net Income	8	17	79	94	43	90	49

(Continued)

SOURCE: Congressional Budget Office using data from the Farm Credit Administration.

NOTES: Represents only data for the banks and associations in the system. Certain transactions associated with the Jackson Federal Land Bank in receivership, the Financial Assistance Corporation, and the Insurance Corporation are not included. If these transactions were included, the system's net income would be $608 million, as reported in the FCS's *Annual Information Statement-1990*.

FICB = Federal Intermediate Credit Bank.

TABLE 5. Continued

Farm Credit Banks					Banks for Cooperatives			
Wichita	Texas	Western	Spokane	Jackson FICB	CoBank	Springfield	St. Paul	System Total
Balance Sheet								
Assets								
3,418	3,584	4,657	2,337	464	9,985	149	1,097	50,159
107	162	519	365	19	100	0	0	2,602
368	1,379	875	528	86	2,981	117	286	11,855
-160	-104	-121	-87	-16	-136	-2	-14	-1,516
3,732	5,021	5,931	3,142	552	12,930	264	1,370	63,100
Liabilities and Capital								
3,212	4,424	5,396	2,930	460	12,157	213	1,164	56,412
422	381	263	-16	77	140	10	31	3,511
60	214	249	116	10	331	22	91	1,939
482	595	512	100	87	471	33	122	5,450
38	1	22	111	5	302	18	84	1,238
3,732	5,021	5,931	3,142	552	12,930	264	1,370	63,100
Income Statement								
109	106	107	53	18	164	3	27	1,326
13	9	18	10	6	d	4	6	151
-72	-62	-82	-88	-18	-74	-3	-10	-864
-5	-6	-8	-4	-1	-15	-0	-2	-82
20	-10	-5	-6	2	-28	0	0	22
65	37	30	-36	6	47	4	21	553

a. Includes accrued interest receivable.

b. Includes cash, investments, and other nonearning assets such as buildings owned by the Farm Credit System.

c. Includes fees for services and other miscellaneous adjustments.

d. Less than $500,000.

10 percent of the value of the pool.[5] The guaranteed securities may be sold to investors in national capital markets. Farmer Mac was also recently authorized to issue and guarantee securities backed by the guaranteed portions of loans guaranteed by the Farmers Home Administration (FmHA). Farmer Mac issued its first guaranteed securities backed by FmHA-guaranteed loans in early April 1991.

Recent Performance and Outlook

Since 1987 the system has returned to profitability, earning $704 million in 1988, $695 million in 1989, and $553 million during 1990.[6] Moreover, the source of earnings has changed during the past three years. In 1988, negative loan loss provisions accounted for virtually all of the system's net income.[7] In other words, the system earned almost nothing from current operations in 1988. Negative loan loss provisions imply that net income in the pre-1988 period was somewhat better than reported and that net income in 1988 was somewhat overstated. The system has continued to post negative loan loss provisions, but the magnitude of these reversals and their share of net income have fallen considerably. In 1989, negative loan loss provisions equaled 41 percent of net income as reported by the FCS, but in 1990 they accounted for only about 4 percent of net income.

There are several reasons for the improved performance of the FCS. The most important, of course, is that the general farm economy has been much healthier during the past three years than during the 1985-1987 period. This means that borrowers are better able to service their debt, the amount of nonaccruing loans has fallen, and the FCS has been able to lower its loan loss reserves. Second, interest expenses for the system have dropped significantly--from 11.2 percent of total system debt in 1985 to 8.4 percent in 1990. Finally, operating costs for the system have also declined since 1985. Operating expenses during 1990 were 27 percent less than in 1985, but remained at about 1.5 percent of total assets. Table 5 on pages 82 and 83 provides additional details about the status of each FCS district at the end of 1990.

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[5] This will not provide as much protection as would a statutory 10 percent minimum capital requirement for Farmer Mac, because each reserve is only available to absorb losses on one pool.

[6] The 1990 figure reflects the FCA's accounting treatment, which excludes certain transactions associated with the Jackson Federal Land Bank in receivership, the Financial Assistance Corporation, and the Insurance Corporation. The FCS reported net income of $608 million in 1990.

[7] Loan loss reserves appear on the balance sheet of a lender and are funds that the institution has set aside to cover expected losses on loans. Negative loan loss provisions occur when an institution decides that losses will be less than it had expected in an earlier period.

Despite the improved performance of the FCS as a whole, portions of the system remain quite vulnerable. The section of this chapter that discusses the capitalization of the system will examine the question of vulnerability in some detail. The FCA uses a CAMEL rating system to summarize the financial well-being of system institutions. An institution's CAMEL rating reflects an evaluation of its ***C***apital adequacy, the quality of its ***A***ssets, the adequacy of its ***M***anagement, its ***E***arnings, and its ***L***iquidity. Each of these five categories receives a score of between 1 and 5, with a 5 indicating weakness and a 1 indicating strength. The five individual scores are then weighted to achieve a cumulative score of between 1 and 5.[8] A cumulative score of 1 or 2 indicates minimal concern about the safety and soundness of an institution, while scores of 4 or 5 indicate considerable concern.

The two most recent CAMEL ratings for FCS banks, FLBAs, and direct lending associations are summarized in Table 6. Banks and direct lending associations are rated annually, so the current rating is for 1990 and the previous rating is for 1989. FLBAs, in contrast, are rated once every three years, so the current ratings shown were made sometime between 1988 and 1990 and the previous rating sometime between 1985 and 1987. The most recent rating includes all of the FCS banks (FCBs and BCs), 139 of the 141 then-existing FLBAs, and 132 of the 149 direct lending associations. The data in Table 6 show that the FCS is improving its financial condition, but that some of its institutions have significant weaknesses. For each of the three types of insti-

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[8] The weights used by the examiners to derive the cumulative score are judgmentally determined. The scores for capital levels, asset quality, and management are relatively more important than those for earnings and liquidity. In addition, there may be interactions between the components. For example, if the examiner feels that the management of an institution is particularly strong and has a sound business plan in place, deficiencies in asset quality may be given less weight.

TABLE 6. CAMEL RATINGS FOR INSTITUTIONS IN THE FARM CREDIT SYSTEM

CAMEL Rating	Current Rating Number	Current Rating Percentage of Total	Previous Rating Number	Previous Rating Percentage of Total
District Banks				
1	0	0	0	0
2	5	33.3	5	33.3
3	7	46.7	6	40.0
4	3	20.0	3	20.0
5	0	0	1	6.7
Total Number	15		15	
Average Rating	2.87		3.00	
Federal Land Bank Associations (FLBAs)				
1	6	4.3	7	5.6
2	34	24.5	25	19.8
3	49	35.3	29	23.0
4	46	33.1	33	26.2
5	4	2.9	32	25.4
Total Number	139		126	
Average Rating	3.06		3.46	
Production and Agricultural Credit Associations				
1	1	0.8	2	1.9
2	71	53.8	44	41.9
3	34	25.8	31	29.5
4	25	18.9	23	21.9
5	1	0.8	5	4.8
Total Number	132		105	
Average Rating	2.65		2.86	

SOURCE: Congressional Budget Office using data from the Farm Credit Administration.

NOTES: A CAMEL rating reflects an evaluation of an institution's *C*apital adequacy, the quality of its *A*ssets, the adequacy of its *M*anagement, its *E*arnings, and its *L*iquidity. Each of these five categories receives a score of between 1 and 5, with a 5 indicating weakness and 1 indicating strength.

For the banks and direct lending associations, the current ratings are for 1990, and the previous ratings are for 1989. For the FLBAs, the current ratings are for sometime between 1988 and 1990, and the previous ratings are for sometime between 1985 and 1987.

tutions considered, the average CAMEL rating was lower in the current period than in the previous period, indicating an improved financial condition.[9] In particular, the number of institutions with the worst CAMEL rating declined quite dramatically between the two rating periods. For the FLBAs and direct lending associations, it is not clear to what extent this improvement is the result of improved financial conditions or reflects the dissolution of some of the weaker associations.

Although the overall financial condition of FCS institutions apparently has improved, 67 percent of the banks, 71 percent of the FLBAs, and 45 percent of the direct lending associations had CAMEL ratings of 3 or higher, indicating some degree of concern about their financial well-being. There is also some concern about the quality of the system's assets. The FCA notes an increase in the volume of nonaccruing and other high-risk loans at some institutions, particularly direct lending associations. Specifically, the proportion of high-risk loans in the overall portfolio of assets increased during 1990 in five of the district Farm Credit Banks and two of the Banks for Cooperatives. A significant proportion of this increase, however, was caused by the adoption of more conservative accounting standards by two districts at the behest of the FCA.

The outlook for the FCS is inextricably tied to the outlook for the farm sector as a whole. While it is true that agriculture is in much better financial shape than it was two or three years ago--farmers have much lower debt loads and the sector has experienced two successive years of record or near-record income levels--substantial uncertainties about the health of the farm sector remain. For example, the apparent collapse of the GATT (General Agreement on Tariffs and Trade) negotiations could signal future problems for U.S. agricultural exports.[10] At the same time, the recently enacted Farm Bill provides substantially less income protection for farmers. Finally, farm incomes are affected by volatile and uncontrollable changes in interest rates and oil prices. Many analysts are forecasting that real net farm income will decline by between 5 percent and 10 percent in 1991 relative to the record level reached in 1990. In light of these considerations, the financial condition of the FCS will merit close scrutiny over the next few years.

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[9] For lack of data, the average CAMEL rating for each group is not weighted by the size of the institutions involved. This could be an important shortcoming if the larger institutions within each group have worse CAMEL ratings, since this would bias the average downward and make the group's financial condition appear better than warranted.

Certainly the FCS is in much better shape today than in 1987. Yet parts of the system remain vulnerable to a financial shock. The 1987 Agricultural Credit Act created a number of institutional safeguards to forestall future demands on the taxpayer to assist the FCS. The most important of these are the minimum capital standards and the insurance fund. Neither of these safeguards is fully in place. Until they are fully implemented at the start of 1993, the system will be in a period of heightened vulnerability.

CREDIT RISK

Defaults on loans made by the FCS depend on the performance of the agricultural sector. The system is exposed to credit risk because the performance of agriculture can deviate from expectations, for economic or environmental reasons. Economic sources of variability in the farm sector's performance include changes in macroeconomic policy (such as a switch from an expansionary to a restrictive monetary policy), changes in farm policy (such as unexpected reductions in support prices), and changes in trade policies (such as increased protectionism in export markets). Environmental factors that affect the financial health of the farm sector include weather disturbances and uncontrolled infestations by pests. It is very difficult, perhaps impossible, to anticipate many of these economic and environmental changes.

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[10] The 1990 Omnibus Budget Reconciliation Act included language that authorized additional expenditures for agricultural export promotion programs should there be a breakdown in the GATT negotiations. In that event, additional funds would go to the Export Enhancement Program, which subsidizes the export of agricultural commodities.

Aside from economic and environmental hazards, the FCS may incur unnecessary credit risk through inadequate evaluation and screening of loan applications. An unnecessary level of credit risk can arise from improper loan standards, or deviations from appropriate loan standards. Deviations from loan standards might occur in an effort to respond to competition or to satisfy other, possibly nonquantifiable, reasons for making a loan (such as the character of the borrower).

Management and Control of Credit Risk

The FCS and the FCA currently have a number of procedures for monitoring and controlling credit risk within the system. The district banks have agreements with their member associations specifying minimum levels of financial performance that must be met in order to remain in good standing with the banks. Failure to remain in good standing could result in a district bank's refusal to borrow additional funds for an errant association. District banks also have general supervisory authority over their associations.

The associations themselves have several means of managing or controlling credit risk. For example, most FCS institutions use credit-scoring techniques when evaluating loan applications. Deviations from these standards are, however, permitted in response to particular conditions. Most associations also have loan review committees that attempt to maintain quality control standards, classify loans correctly (as accruing, nonaccruing, or high risk), and establish adequate loan loss reserves. Finally, since the 1987 Agricultural Credit Act, most associations use differential pricing in recognition of the different degree of credit risk posed by different types of borrowers.

The Farm Credit Administration, as the system's supervisor, plays a critical role in managing and controlling credit risk. The FCA monitors each FCS institution's quarterly reports in an effort to spot developing problems. Through its examination and enforcement powers, which will be discussed in greater detail in a later section of this chapter, the FCA can force institutions to change practices that are generating unacceptable levels of credit risk.

Indicators of Loan Performance

Three indicators of the performance of loans made by FCS institutions are the percentage of loans considered to be of poor quality, high-risk loans and other property owned as a percentage of gross loans, and loan loss reserves as a percentage of high-risk loans.[11] Table 7 provides a summary of these measures of credit risk, by FCS district, at the end of the fourth quarter of 1989 and the third quarter of 1990.

Poor-quality loans include all those classified by the system as "substandard," "doubtful," or "loss"--each of these classifications reflecting a concern about the ability of these borrowers to service their debts.[12] The system considers the quality of the loan portfolio satisfactory if 10 percent or less of gross loan volume is considered to be of poor quality. Poor loan quality of between 10 percent and 20 percent of gross loans is considered "minimally-acceptable-to-some-weakness," while poor loan quality of more than 20 percent of gross loan volume is unsatisfactory. At the end of the third quarter of 1990, the loan quality of six banks was considered satisfactory, that of one unsatisfactory, and that of the remaining eight to be in the minimally-acceptable-to-some-weakness category (see Table 7). On average, loan quality improved slightly during the period of December 1989 to September 1990.

The relationship between gross loan volume and high-risk loans plus other property owned, which is mostly farmland that has been foreclosed upon and not yet disposed of by the system, is meant to measure the proportion of the bank's portfolio that might generate few or no returns if the farm sector suffered an economic downturn. The system's internal standards for this ratio are as follows: less than 5 percent is considered satisfactory, 5 percent to 9 percent minimally acceptable, and more than 10 percent unsatisfactory. Interestingly, Table 7 shows that as of September 1990, all of the banks in the FCS were either in the satisfactory range for this measure (five banks) or

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[11] High-risk loans include nonaccruing loans, loans that have been restructured, and loans requiring more than normal amounts of servicing, which may indicate a likelihood of default. Nonaccruing loans include those for which interest or principal is 90 days delinquent and loans for which full collection of principal and interest is in serious doubt. Loan loss reserves are earnings that have been earmarked to cover expected losses on loans.

[12] The use of "poor-quality loans" and "high-risk loans" as indicators of the strength of the FCS portfolio could overstate its weakness. For example, all loans that have been restructured are classified as high-risk and of poor quality--even those that are making timely payments of interest and principal and are adequately collateralized. This is particularly true at the St. Paul FCB and, to a lesser extent, the Omaha FCB, because these districts account for the bulk of restructured loans within the system.

TABLE 7. INDICATORS OF CREDIT QUALITY IN THE FARM CREDIT SYSTEM, BY DISTRICT BANK (In percent)

	Percentage of Poor-Quality Loans[a]		High-Risk Loans and Other Property as a Percentage of Gross Loans[b]		Allowance for Loan Losses as a Percentage of High-Risk Loans and Accrued Interest[b]	
	September 1990	December 1989	September 1990	December 1989	September 1990	December 1989
Farm Credit Banks						
Springfield	8.4	7.4	3.1	1.7	75.7	138.99
Baltimore	8.4	8.9	4.4	3.9	26.9	31.58
Columbia	10.0	13.2	11.1	8.0	33.9	49.57
Louisville	10.1	12.5	12.0	13.6	17.9	18.7
St. Louis	16.5	18.8	13.7	14.5	24.9	24.98
St. Paul	21.8	25.7	32.8	35.8	13.3	13.34
Omaha	20.0	23.0	18.0	18.4	32.1	32.32
Wichita	16.5	18.2	12.9	14.8	36.7	36.07
Texas	12.5	14.6	11.4	12.1	27.5	28.3
Western	17.8	20.8	19.0	18.0	12.8	13.22
Spokane	20.0	19.3	21.6	22.2	14.6	14.38
Jackson[c]	14.4	16.1	9.5	10.9	32.5	42.3
Banks for Cooperatives						
CoBank	5.5	6.1	3.7	2.7	35.1	43.86
Springfield	0.2	0.0	0.0	0.0	d	d
St. Paul	2.2	3.2	2.1	1.6	62.9	101.68

SOURCE: Congressional Budget Office using data from the Farm Credit Banks Funding Corporation.

a. Includes all those classified as "substandard," "doubtful," or "loss" in the Farm Credit System's "Credit Monitoring Report."

b. Other property is mainly farmland that has been foreclosed upon and not yet disposed of. Other property and accrued interest are included in both high-risk loans and gross loans.

c. Federal Intermediate Credit Bank.

d. Springfield Bank for Cooperatives had no loans judged to be of high risk.

in or on the edge of the unsatisfactory range (ten banks). None were in the middle range. Since the start of 1990, the ratio had improved in seven districts, deteriorated in seven, and was unchanged in one.

Finally, the ratio of loan loss reserves to high-risk loans provides a measure of the volume of loans that have a higher-than-average probability of default relative to the resources set aside by the system to deal with such an eventuality. The system does not have a standard for this measure, but the smaller the ratio the greater the likelihood that the reserves would be insufficient to cover any losses associated with loan defaults and foreclosures. This percentage ranges from a low of about 13 percent for the St. Paul and Western FCBs to a high of 76 percent in the Springfield FCB. What might be of greatest concern is that many of the districts having the lowest ratios of loan loss reserves to high-risk loans are also those with portfolios of the poorest quality as measured by the two other indicators of credit quality discussed above.

Managing Credit Risk at Farmer Mac

Farmer Mac will be exposed to credit risk. The corporation must absorb any losses incurred on a pool of loans backing securities it has guaranteed in excess of the 10 percent share held by the originators or poolers of the loans. Farmer Mac will attempt to minimize the risk of such losses by enforcing standards with respect to the geographic and commodity diversification of the loans in the pools backing the securities it guarantees; by maintaining underwriting and appraisal standards for loans allowed into pools and monitoring compliance with the standards; by using a stress test to assess the credit risk of each pool and to require additional reserves or subordinated securities, if desired; and by monitoring the pool's performance. Farmer Mac guarantees of securities backed by loans guaranteed by the Farmers Home Administration will expose it only to the risk of delayed payment by the FmHA.

INTEREST RATE RISK

The Farm Credit System is exposed to interest rate risk from three sources. First, there may be a mismatch between the maturities of the loans made by the FCS and the securities sold to fund those loans. Second, borrowers can repay loans made by the system ahead of schedule, while most of the bonds used to finance the loans cannot be called, or prepaid, by the FCS. Third, the system would incur losses if it failed to adjust its variable-interest-rate loans in response to changes in interest rates. The May 1990 Treasury report on GSEs estimates that the interest rates on nearly 80 percent of all loans on the books of the Farm Credit Banks can be adjusted in response to changes in the cost of funds.[13]

The ability of FCS institutions to change the rates charged on the majority of their loans does not necessarily remove this source of interest rate risk, for two reasons. First, the FCS can pass on changes in interest rates only to the extent that its borrower members are able and willing to absorb those changes, a qualification that is clearly most relevant in a period of rising interest rates. If the system's cost of funds increases but the costs of its competitors do not, an increase in the rates charged by the FCS could induce its borrowers to refinance their debt with other lenders. Likewise, an increase in interest rates could force some of its borrowers into nonaccruing status--transforming interest rate risk into credit risk. Second, FCS loans are not indexed to an external measure of interest rates. These loans typically have a target index, but the decision to raise or lower rates is made by the managements and boards of the various FCS institutions. If management or the board decides not to match an increase in its cost of funds, the institution's net interest income will decline.

Management and Control of Interest Rate Risk

The FCS has several mechanisms in place to manage its exposure to interest rate risk, some of which have been put in place or upgraded since 1987. First, as noted above, FCS institutions can vary the interest rates on most loans. Districts do this in different ways. Some districts act as if these loans were tied to an external index, and reprice them on a regular basis. Other districts appear to take greater cognizance of the interest rates charged by their competitors. Thus, while the high proportion of variable-rate loans contained in its portfolio provides the system with the potential to shift the cost of changes in interest rates to borrowers, its success in doing so is still somewhat uncertain. To reiterate, a direct linkage to an external interest rate might eliminate the FCS's exposure to interest rate risk only at the expense of increasing its exposure to credit risk.

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[13] Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises* (May 1990), p. D-35.

Second, the district banks and the Farm Credit Banks Funding Corporation now monitor the banks' portfolios (including assets held by local associations) in order to spot and respond to mismatches between loan and bond maturities. One focus of their analyses is the maturity and duration gaps of the banks' portfolios. As discussed in Chapter 1, maturity gap analysis assesses the differences in the amounts of an institution's assets and liabilities that will undergo repricing in different maturity periods. Duration gap analysis assesses the difference between the timing of the cash flows from an institution's assets and liabilities, considering the cash flows in terms of their net present value.

Responding to Prepayment Risk

The system is addressing prepayment risk by using interest rate swaps, prepayment penalties, and other variations in the terms of its loans. The system also has begun to experiment with more reliance on callable bonds rather than noncallable bonds, which have been more traditional for the FCS. Both the inclusion of prepayment penalties and the sale of callable bonds, which carry higher interest rates, increase the cost of borrowing from the system.

TABLE 8. SENSITIVITY OF THE ESTIMATED MARK-TO-MARKET NET WORTH OF FARM CREDIT BANKS AND DISTRICTS TO A CHANGE OF ONE PERCENTAGE POINT IN INTEREST RATES, YEAR-END 1990

Change in Mark-to-Market Net Worth from a Change of One Percentage Point in Interest Rates (Percent)	Districts (Number)
Greater than 10	0
5 to 10	2
3 to 4.9	1
0 to 2.9	9
-2.9 to 0	1
-4.9 to -3	2

SOURCE: Congressional Budget Office using data from the Farm Credit Banks Funding Corporation.

NOTE: Estimates made by the Columbia, Louisville, Omaha, St. Paul, Springfield, Texas, and Wichita Farm Credit Banks and the three banks for cooperatives are for those institutions only. Estimates made by the Baltimore, St. Louis, Spokane, and Western Farm Credit Banks and the Jackson Federal Intermediate Credit Bank are for the banks and the associations they serve.

Measures of Interest Rate Risk

Estimates of the change in the mark-to-market net worth of an institution caused by a change in interest rates probably provide the best single measure of its exposure to interest rate risk.[14] Table 8 indicates the percentage change in the estimated mark-to-market net worth at year-end 1990 of system banks and districts caused by an increase in interest rates of 100 basis points (one percentage point). A positive value in Table 8 means that mark-to-market net worth declines if interest rates increase. The larger the absolute magnitude of the change in mark-to-market net worth, the more sensitive is the bank's net income to a change in interest rates. Changes of 10 percent or more in absolute magnitude are considered by the system to indicate a significant exposure to interest rate risk. As Table 8 indicates, none of the entities exceeds this level. The average change for the system is 1.3 percent.

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[14] Mark-to-market net worth, which is determined by estimating the current market value of the institution's assets and liabilities, is not without its shortcomings as an indicator of exposure to interest rate risk. To calculate the change in mark-to-market net worth caused by a change in interest rates, it is necessary to make assumptions about loan prepayments. Each bank within the FCS calculates this measure independently using different assumptions.

Further, the banks in the three districts with substantial sensitivity to changes in interest rates are also the most active in managing gaps between the maturities of their assets and liabilities. CBO also examined, but does not report here, the system's efforts to manage maturity gaps. The system uses, among other things, interest rate swaps and the futures market to reduce maturity gaps. Interest rate swaps occur when lenders exchange responsibilities for making interest rate payments on outstanding obligations. Such an exchange allows both institutions to match the maturities of assets and liabilities more closely.

Two conclusions can be drawn about the system's exposure to interest rate risk. First, the system currently has relatively little exposure to interest rate risk. Second, the efforts of the various parts of the system to manage interest rate risk vary considerably in degree.

Farmer Mac's Exposure to Interest Rate Risk

Under authority granted in the 1990 Farm Bill, Farmer Mac is authorized to create pools of agricultural loans guaranteed by the Farmers Home Administration and to sell guaranteed securities backed by those loans. The process of assembling the pools will expose Farmer Mac to interest rate risk, but it has plans to monitor and control its exposure.

CAPITALIZATION OF THE FARM CREDIT SYSTEM

The level of capital of a financial institution is an important indicator of its financial health. Capital enables a lender to cope with unexpected financial problems without becoming insolvent. An assessment of the capital adequacy of the FCS is complex, because of the system's decentralization and the role of the insurance fund.

Structure and Levels of Capital

Because the FCS is a cooperative, a portion of its capital comes from direct investments by its members and a portion from income earned that was not returned as cash to its members. Direct investment in the system by its members comes in the form of borrower stock, which members must purchase in order to obtain loans from the FCS. Some of the borrower stock in the system is protected and is not included in the permanent capital stock of the FCS. The remainder of borrower stock is at risk, in the sense that the system could use this capital to cover any losses incurred. Retained earnings in the FCS can be in the form of allocated or unallocated capital.[15] Table 5, which shows the level of capital by district, indicates that the bulk of the capital now held by the system is at risk, with approximately 60 percent of the at-risk capital in the form of retained earnings and 40 percent in the form of at-risk borrower stock.

The 1987 Agricultural Credit Act directed the Farm Credit Administration to define minimum capital standards for system institutions. In May 1988, the FCA proposed that the minimum capital level be set at 7 percent of risk-weighted assets.[16] This minimum capital standard will be phased in over time, with full compliance to be achieved by the beginning of 1993.

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[15] A cooperative can retain income in either of two ways. First, it can retain income directly. However, if it does, it must pay the corporate income tax on its net income. Capital generated in this fashion is generally called "unallocated capital" on the balance sheet. Alternatively, the cooperative can declare a patronage refund for its members (the size of the refund is usually determined by the amount of business done with the cooperative) and pay part of the refund in cash and part in additional equity in the cooperative. As long as at least 20 percent of the refund is in cash, the cooperative pays no tax on income returned as patronage (the recipient pays tax on the full value of the refund, not just the cash portion). Capital generated by this means appears as "allocated capital" on the balance sheet.

[16] The Farm Credit Administration assigns assets held by FCS institutions to one of five categories, each with its own risk weight. For example, agricultural loans are in category 5 with a risk weight of 100 percent. Assets in category 1, such as cash, demand deposits, and claims on Federal Reserve Banks, have a risk weight of zero. Those in category 2, such as Treasury and federal agency debt, have a risk weight of 10 percent. Category 3 assets, such as GSE securities and state or local government obligations, have a risk weight of 20 percent. Those in category 4 have a risk weight of 50 percent and include rural housing loans on which the FCS has a first lien. These risk weights parallel those applied to the assets of federally insured banks and thrifts. Since the bulk of FCS assets are agricultural loans, the minimum risk-adjusted capital level for most direct lending institutions is roughly 7 percent of total assets.

The FCA set the minimum capital standard at a level that it believed would ensure the safety and soundness of the FCS. In setting the minimum level, the FCA analyzed a number of scenarios to find the amount of capital needed by system institutions in the event of a moderate downturn in the farm economy. Based on FCA analysis, the combined Federal Land Banks and FLBAs would have needed permanent capital equal to about 10 percent of risk-adjusted assets at the start of the downturn, in 1984 or so, in order to have survived the 1980s without any sort of external assistance. A financial downturn that was less severe than the one experienced in the mid-1980s was used to set the minimum capital standards, since they are intended to protect against normal business risk rather than economic catastrophe.

In addition, the Farm Credit Administration analyzed the capital requirements of other financial institutions and their actual capital positions. The competitive position of the system could be undermined if its capital requirements were significantly higher than those of other agricultural lenders. Holding capital as equity has a cost, in terms of forgone interest on loans that would otherwise have been made. The FCA concluded that a 7 percent minimum risk-based capital requirement adequately addressed its concerns about safety and soundness. There are differences between what FCS institutions and commercial banks may count as capital--FCS institutions may not count loan loss reserves, for example.

As of September 1990, all but 11 of the FCS institutions, which then numbered 305, had achieved risk-adjusted capital levels of 7 percent or more, and only one bank, the Spokane FCB, was not in compliance with the interim capital standard established by the FCA. In the fourth quarter of 1990, the members of the Spokane FCB agreed to increase their equity position in the bank in order to bolster their capital position and come into compliance with the interim requirements. Finally, the FCA's regulatory authority allows it to require institutions to maintain more than the minimum level of capital if this is necessary to assure safety and soundness.

The FCS Insurance Fund

Collateral pledged by FCS institutions to back debt issued for them, and their earnings and at-risk capital stock, are the first sources of funds to protect investors in the system's securities. Should internal sources prove insufficient, however, the FCS Insurance Corporation, which was created as part of the 1987 Agricultural Credit Act, may provide supplementary funds. The premium rate and the ultimate size of the fund were defined in the act, which also required that the Insurance Corporation be managed by a board of directors composed of the board of directors of the FCA. Because the Insurance Corporation is an agency of the U.S. government, premiums paid into it are counted as receipts (and hence reduce the budget deficit), and indemnities paid out of it are on-budget expenses.

Premium Structure. The structure of premiums was determined, in part, by the desire to avoid one of the primary shortcomings of the federal insurance funds of other financial organizations. Most other insurance funds make no link between the risk that an institution poses to the fund and the premium it must pay for insurance. When premiums do not reflect risk, some analysts argue, insurance can create incentives for taking excessive risks. The Congress attempted to address this concern in the case of the insurance fund by defining the premiums in terms of the performance of the loans in a bank's portfolio. For accruing loans, the insurance premium is 0.0015 times the principal outstanding. For loans that have fallen into nonaccruing status, the insurance premium is 0.0025 times the principal outstanding. (For loans guaranteed by the federal government, the rate is 0.00015 times outstanding principal.)

While this premium structure is superior to that of other federal insurance funds, it is not without shortcomings. First, it is not clear whether the differential between the rate for accruing loans and that for nonaccruing loans is sufficiently great to discourage excessive risk taking. Second, the penalty for risk taking is assessed after, rather than before, the loan has fallen into nonaccruing status. Not only is this a less effective method of discouraging excessive speculation, but the penalty is assessed when the institution is least able to pay it.

Target Amount for the Fund. The 1987 act set, as the target for the ultimate size of the fund, a level of 2 percent of the value of the system's insured liabilities or such other level as the Insurance Corporation may deem to be actuarially sound. The size of the fund that will provide actuarial soundness depends on a host of factors, many of which are beyond the control of the Insurance Corporation or the FCS. For example, the demands on the capital in the insurance fund will depend heavily on the performance of the farm economy--which, as has been noted, is heavily dependent on exports, interest rates, and energy prices. The response of farmers to declines in their incomes is also crucial. It is not clear whether farmers would tighten their belts in order to make their loan payments, or whether sound borrowers who faced the prospect of losing their capital investment would flee to other lenders, threatening the financial viability of the system. The system has addressed the latter problem by reducing the amount borrowers are required to invest in the FCS and by placing greater restrictions on when borrower stock can be retired.

Neither the performance of the farm economy nor the response of farmers to economic stress can be predicted with a great deal of confidence. The experience of the 1980s is generally believed to have been worse than anything the system is likely to undergo in the future, given the changes that have been made in the structure of the FCS and in its business operations. The target of 2 percent of total insured liabilities may be reasonable in light of the minimum capital standards that are being put in place, the enhanced statutory authority of the FCA, and improved management within the system. Further, the Insurance Corporation's board can increase the target level if it can establish that more funds are needed to assure the actuarial soundness of the fund. The next section will provide a partial test of the reasonableness of the 2 percent target.

A Scenario Analysis of the System's Capital Adequacy

In order to gauge the ability of the system to weather a financial downturn without drawing on the resources of the government, CBO conducted a simple scenario analysis. The scenario assumes that, starting in 1991, macroeconomic factors result in a decline in the quality of the system's assets similar to the decline experienced in the period beginning in 1984. The scenario further assumes that the system fully controls interest rate risk, so that its net interest margins are not affected by the downturn in the farm economy (a complete set of the assumptions is provided in Appendix A). Projected interest income and interest expenses for the system are based on CBO's projected rates for three-month Treasury bills. In order to deal with the extensive institutional change that has occurred since 1987, the scenario assumes that within each district the banks and the associations have operated as if they were a single entity during the 1984-1990 period and continue to do so. In particular, all at-risk capital within the district, whether held by the bank or the associations, is assumed to be available to the district bank to offset losses. A simplified accounting model, based on data from the FCA, is used to generate income and balance sheet figures for the FCS, by district, for the 1991-1996 period.[17]

The choice of this scenario does not in any way represent a prediction by CBO that this is what will happen to the FCS during the next five years. Rather, the scenario was designed solely to examine the financial resilience of the system if faced with another difficult economic environment.

Summarizing the Results. The projection shows a substantial decline in gross loan volume (accruing plus nonaccruing loans) from $52.8 billion in 1990 to $36.5 billion in 1996 (see Table 9). Substantial losses are incurred by the system in 1992 and 1993, though the losses are slightly less than half as large as those experienced during the 1985-1987 period. The losses are driven by increases in operating costs (as the cost of servicing loans increases) and loan loss provisions (to offset possible loan write-offs).

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[17] The structure and complexity of the FCS pose analytical problems. The "bottom-up" organizational structure means that cooperatives at the local level have a substantial degree of autonomy, while the powers of the national-level institutions are fairly circumscribed. As a consequence, there is a great deal of variation in the practices and financial condition of the different elements that make up the system, and analysis done at the aggregate system level has only a limited value. However, an analysis of the capital adequacy of each part of the FCS (15 banks and 262 associations at present) is far beyond the scope of this report. In the scenario analysis conducted by CBO, the balance sheets of FCS institutions were aggregated at the level of the 15 banks, although Table 9 reports the results of the simulation at the system level.

TABLE 9. A SCENARIO ANALYSIS OF THE CAPITAL ADEQUACY OF THE FARM CREDIT SYSTEM, ASSUMING A REPETITION OF THE 1980s (In millions of dollars)

	Actual	Estimated					
	1990	1991	1992	1993	1994	1995	1996
Balance Sheet							
Assets							
Accruing Loans	50,159	43,722	37,895	34,026	33,683	34,181	34,974
Nonaccruing Loans	2,602	806	2,311	3,484	2,908	1,924	1,514
Other Assets[a]	11,855	6,913	6,866	9,518	8,228	7,699	9,251
Less Loan Loss Reserves	-1,516	-1,343	-2,288	-2,676	-2,002	-1,091	-720
Total	63,100	50,098	44,784	44,352	42,817	42,712	45,018
Liabilities and Capital							
System Liabilities	56,412	43,811	40,270	40,879	39,356	38,704	40,642
Capital at Risk							
Retained earnings	3,511	3,637	2,228	1,433	1,593	2,229	2,657
At-risk stock	1,939	1,660	1,494	1,405	1,361	1,374	1,394
Subtotal	5,450	5,296	3,722	2,838	2,954	3,602	4,051
Protected Stock	1,238	991	793	634	507	406	325
Total	63,100	50,098	44,784	44,352	42,817	42,712	45,018
Performance Indicators							
Capital Target[b]	2,459	2,568	2,726	3,105	2,997	2,990	3,151
Capital Shortfall[c]	0	0	202	1,048	1,285	1,101	1,294
Insurance Fund	438	561	665	771	880	992	1,108
Income Statement							
Net Interest Margin	1,326	1,278	985	734	731	795	846
Other Income[d]	151	126	94	90	56	65	70
Operating Expenses	-864	-1,081	-1,211	-714	-708	-678	-584
Insurance Payments	-82	-68	-63	-60	-58	-56	-56
Provisions for Loan Losses	22	-130	-1,214	-846	139	510	153
Net Income	553[e]	126	-1,409	-795	160	636	428

SOURCE: Congressional Budget Office projections using data from the Farm Credit Administration.

a. Includes cash, investments, and other nonearning assets such as buildings owned by the Farm Credit System.

b. Capital target equals interim FCA standards in 1990-1992, 7 percent of assets in 1993-1996. The amount required in the latter period overstates the final standards somewhat, because many of the assets of the Banks for Cooperatives have low risk weights.

c. Capital shortfall is the cumulative amount by which individual districts and banks fall short of the capital targets.

d. Includes fees for services and other miscellaneous adjustments.

e. Certain transactions associated with the Jackson Federal Land Bank in receivership, the Financial Assistance Corporation, and the Insurance Corporation are not included. If these transactions were included, the system's net income would be $608 million, as reported in the FCS's *Annual Information Statement-1990.*

Most important, the scenario indicates that while the capital of the system as a whole exceeds the 7 percent minimum level for most of the projection period, some individual districts do not. In this scenario, seven districts fail to meet their minimum capital standards. Four of them dip below this level by relatively small amounts during three or four years; the other three have insufficient capital throughout most of the projection period and show few signs of recovery. In fact, for one district, total capital is less than the minimum required from 1992 onward.

The results also indicate that, after 1992, the capital shortfall could not be completely offset by payments out of the insurance fund. The lack of improvement in the financial condition of three districts and the magnitude of their capital shortfalls suggest that institutions in these districts might well face receivership under the assumptions employed in the scenario.

The scenario assumed that the system could maintain its interest rate margins. To test the sensitivity of the results to this factor, an alternative scenario was constructed in which the interest margins declined by 50 basis points in 1991 relative to the original scenario, by 100 basis points in 1992 and 1993, and by 50 basis points in 1994. If the system experienced this type of reduction in interest rate margins, compared with the original scenario, total losses would increase by 49 percent, the capital shortfall by 1996 would be 44 percent greater, and 8 of the 15 banks would fail to maintain minimum capital standards during the projection period. Three of the eight banks that fail to maintain minimum capital standards do so by relatively small, transitory amounts, while the others have large and continuous shortfalls.

Qualifying the Results. These results are dependent on a number of simplifying assumptions. It seems clear, for example, that while the system has made great strides in managing interest rate risk, it is somewhat unrealistic to assume that all interest rate risk could be avoided during a downturn in the farm economy. At a minimum, problems that might have shown up as interest rate risk (reduced interest rate margins) during the 1980s could easily appear as credit risk (borrowers' inability to pay the higher interest rates being passed on to them by the FCS) in some future downturn.

The assumption that each district is quasi-autonomous and unified is also an oversimplification of how the component parts of the FCS would react to another economic downturn. In some districts, the district banks have written agreements providing access to associations' retained earnings and at-risk borrower stock. But the need for access to this capital will come much sooner in any future financial crisis, given the lower levels of retained earnings at the bank level. In ad-

BOX 6
Comparison of the CBO and OMB Stress Tests of the Farm Credit System

The Office of Management and Budget (OMB) has made a projection of how the Farm Credit System (FCS) would perform if a significant downturn in the farm economy occurred beginning in 1995. OMB estimated the amount by which each FCS district bank would have to raise its interest rate margin in order to comply with the Farm Credit Administration's (FCA's) capital requirement of 7 percent of risk-weighted assets. OMB concluded that five districts would have to raise their interest rate margins by substantial amounts in order to remain solvent, and that competitive pressures might limit their ability to achieve the required increases in loan rates.

OMB's analysis, summarized in the President's budget for fiscal year 1992, differs in two respects from the simulation conducted by CBO and reported in the text. First, OMB's stress test assumes that commodity prices and agricultural land values decline by 10 percent a year for three years, whereas CBO's stress test simply assumes that farm borrowers will have difficulty making their payments during the scenario. Second, CBO's stress test assumes that a downturn begins earlier, when the system has had less time to recover from the difficulties of the 1980s. This difference in timing probably makes CBO's test more severe than OMB's.

Also, OMB assumes that five FCS district banks would have to raise their interest margins, in some cases by substantial amounts, to be in compliance with the FCA's 7 percent minimum capital standard by the time its stress is assumed to begin in 1995. As of September 1990, all but five Farm Credit Banks had already attained that level and all are required to have attained minimum capital levels by the end of 1992.

Despite these differences, the general conclusions reached by OMB are not radically different from the results of CBO's analysis. Both analyses indicate that perhaps five or six FCS districts would face financial difficulties if a substantial decline in the agriculture sector occurred (though the specific districts projected to have problems are not necessarily the same).

dition, the interests and loyalties of the individual associations are split between self-preservation and responsibility to the system. In the past, self-preservation has proved to be the more powerful influence on an association's behavior.

Finally, just as an examination of system-level results can mask problems experienced by individual districts, so too can district-level analysis mask problems at the association level. Thus, although this analysis indicates that many of the districts in the FCS could withstand a substantial financial shock, the hardships suffered by individual farmers and their local associations could be quite significant. This analysis is unable to evaluate the magnitude of such problems. (Box 6 compares CBO's scenario analysis with a stress test conducted by the Office of Management and Budget.)

FEDERAL SUPERVISION OF THE FCS

The legislation of 1985, 1986, and 1987 helped to redefine and clarify the role of the Farm Credit Administration. Today it is clear that the FCA is an arm's-length supervisor of the FCS with the full complement of tools available to other regulators of financial institutions. The primary objectives of the FCA are to ensure the safety and soundness of the system and to ensure compliance with the FCS charter. Secondarily, the FCA seeks to ensure that the FCS remains a competitive lender to agriculture.

Until the mid-1980s, the FCA was a combination of regulator, consultant, and trade representative. The remaking of the FCA has not been without some friction. Within the system there is a continuing debate over what constitutes sufficient safety and soundness for an institution that is, after all, designed to take chances in a sector that most analysts believe to be riskier than average. Related to this is the broader issue of the equality of regulation among financial institutions. For example, as noted above, the minimum risk-based capital standards set by the FCA are similar to those imposed on commercial banks.

The FCA has been a true regulator only since 1986, so its ability to ensure the safety and soundness of the system over the long term cannot be assessed. The FCA appears to have the institutional capacity to fulfill its duties. The agency has the ability to raise funds independent of the budgetary process (by assessing the FCS institutions it supervises) and is not subject to the salary caps imposed on most government employees (so it can successfully bid for the talent it needs). While the Congress imposes annual limits on the amount the FCA can assess the system, these limits do not seriously constrain the agency's activities at present.

The FCA examines each member institution once a year, except Federal Land Bank Associations, which are examined at least once every three years. The examination, which is more frequent than for other financial institutions, reviews the overall financial health of the institution, looks at any deviation from the institution's formal operating procedures, and may investigate allegations of predatory pricing. By far the most important component of the examination is an indepth assessment of asset quality.

To correct inadequacies in an institution's operations, the FCA can employ a hierarchy of enforcement procedures. The least formal is to send the particular institution a supervisory letter. This letter, which is not enforceable, simply notes the nature of the problem and suggests a remedy. If the supervisory letter does not induce the desired response, the FCA may next seek an "agreement." The agreement, a formal process that is enforceable, defines the problem and the course of action that will rectify the problem. The next level in the escalation is a cease and desist order, which, as the name implies, requires the institution to stop whatever practice the FCA objects to. If the cease and desist order is not obeyed, the FCA can seek civil penalties from the directors, remove or suspend directors, or appoint a conservator or receiver for the institution. These are the same enforcement powers possessed by the Comptroller of the Currency, the Federal Deposit Insurance Corporation, and the Federal Reserve with respect to the banks that they supervise.

Because the FCA has not been an arm's-length supervisor for very many years, its enforcement record is not very long. Table 10 summarizes the enforcement actions undertaken by the FCA in calendar years 1986 through 1990, and the agency's budget for the fiscal years during the period. The table indicates that FCA enforcement actions generally increased through 1988, and have decreased since then. The number of different types of enforcement actions undertaken has increased throughout the period. The budget for the FCA has increased by more than 50 percent over the past five years.

TABLE 10. ENFORCEMENT ACTIONS AND BUDGET OF THE FARM CREDIT ADMINISTRATION, 1986-1990

Action	1986	1987	1988	1989	1990
Supervisory Letter	1	9	8	4	16
Agreement	4	9	23	15	6
Cease and Desist Order	5	15	28	21	10
Conditions of Merger	0	5	29	14	0
Follow-Up Letter	0	0	5	46	36
Amended Agreement	0	0	1	0	0
Amended Cease and Desist Order	0	0	1	2	2
Conditions of Reorganization	0	0	0	1	15
Conditions of Corporate Restructuring	0	0	0	0	4
Budget (Millions of dollars)	23.2	31.2	33.5	34.2	36.1

SOURCE: Congressional Budget Office using data from the Farm Credit Administration.

NOTE: All data are for calendar years with the exception of the FCA's budget, which is for fiscal years.

Finally, the FCA also has authority to examine Farmer Mac and to provide for the general supervision of its safety and soundness. This supervision may include the use of enforcement powers. While the Congress has not given the FCA general rule-making authority over Farmer Mac, the agency is authorized to use its rule-making authority to address specific issues of examination and reporting of Farmer Mac's financial condition. Not so clear is whether the FCA has the authority to define in advance unsafe and unsound business practices for Farmer Mac, or to use the rule-making process to promulgate capital standards for it. However, the FCA would seem to have access to the usual supervisory process, including the ability to issue cease and desist orders and to enforce capital standards after the fact, although it is not clear whether the FCA could rely on its general supervisory authority to appoint a conservator or receiver for Farmer Mac if the corporation got into financial difficulty.

OPTIONS FOR CHANGE

The FCS and the FCA have both undergone substantial institutional changes since the system's financial crisis of the mid-1980s. Some of the institutional changes mandated by the Congress in 1987 are still being put in place, and hence any effort to determine whether or not these reforms will enable the GSE to survive in the future without recourse to federal assistance is premature. As stated above, the next five years or so represent a period of particular vulnerability for the system. The FCS has nearly regained a sound financial footing in the aggregate, but some individual institutions continue to have substantial weaknesses. The newly established minimum capital standards, the reformulation of the FCA as an arm's-length supervisor, and the creation of the insurance fund are important changes. While some questions arise about the details, these safeguards taken together have the potential to ensure the safety and soundness of the FCS.

The changes made by the Agricultural Credit Act of 1987 created or at least highlighted some institutional issues that continue to pose significant challenges to the system. These issues include the future of joint and several liability at the level of the district banks, the appropriate size and rate of growth of the insurance fund, and the FCA's authority to assure the safe and sound operation of Farmer Mac. The remainder of this section examines policy options that would address these issues, and how the options would affect the safety and soundness of the FCS. It also discusses reforms proposed in the President's fiscal year 1992 budget, as well as the possibility, outlined in Chapter II, of making the Farm Credit Administration part of a new agency that would be responsible for supervising the safety and soundness of all GSEs.

Eliminate Joint and Several Liability

FCS institutions face a dilemma during a period of financial crisis such as they experienced during the 1980s. As noted above, the management and boards of directors have responsibilities to the system that may conflict with their responsibilities to their individual institutions. For the system as a whole to be viable, the local associations must be financially sound. Without sound associations, loans would not be made and the rationale for the system would evaporate. Likewise, local associations require a functioning system in order to have access to the national bond markets from which funds are raised for the loans the associations want to make. The dilemma occurs when the system needs capital from the associations in order to preserve itself at a time when the associations feel that their continued viability would be endangered by the capital withdrawal. In the mid-1980s, when many districts and associations faced just such a dilemma, intrasystem capital transfers, though substantial, were insufficient to cope with the problem and generated extensive litigation.

Benefits and Costs of Eliminating Joint and Several Liability. Several benefits might be associated with the elimination of joint and several liability. Currently, joint and several liability applies at the level of the district bank. Historically, much of the responsibility for making and servicing real estate loans, and hence the need for capital in the system, has been at the district banks. The creation of Agricultural Credit Associations and Federal Land Credit Associations, which are direct lenders, pursuant to the Agricultural Credit Act of 1987 is increasing the degree of local responsibility. Eliminating joint and several liability would respond to this contradiction.

Eliminating joint and several liability also could improve the incentive structure for lending within the FCS. When the costs of a given action can be shared while the benefits accrue to the individual institution, each institution has an incentive to increase its exposure to risk. Joint and several liability presents just such a situation because it shares the responsibility for liabilities among districts yet allows the benefits of lending to accrue to an individual district or association. Further, one district has little or no direct control over the lending decisions of other districts or associations. This means that a contingent liability is created by joint and several liability, even though the individual district has few tools for managing this potential risk other than increasing its capital reserves. Competitive pressures in agricultural capital markets are such that the ability of some district banks or local associations to maintain extra capital is limited.

Removing joint and several liability would, however, mean losing a number of advantages that it offers. Some portion of the relatively small margins between the interest rates paid by the U.S. Treasury and by the FCS is the result of joint and several liability. Investors know that they are not purchasing the bond of an individual district that might, in the case of some extraordinary event, be unable to service its bonds. Instead, because of joint and several liability, FCS bondholders benefit from the portfolio diversity offered by a lender with a national market.

Without joint and several liability, investors might view the lack of an explicit federal guarantee on FCS bonds in a different light than they do now. The experience of the 1980s confirmed the expectations of most investors that if the FCS as a whole got into serious financial difficulty, the federal government would ensure the integrity of FCS bonds. If the districts within the FCS were to achieve greater autonomy through the elimination of joint and several liability, bondholders might assess differently the willingness of the government to allow FCS bonds to default. It is conceivable that the government would allow an institution with $3 billion or $4 billion in liabilities to default on its obligations to its bondholders, whereas it would not allow one with $40 billion or $50 billion to do so. Tolerating a default probably would disrupt the market for all GSE obligations, however.[18]

Finally, it is almost certainly cheaper for the system and for investors to deal with consolidated bonds in relatively large offerings than with individual district bonds in smaller offerings. The system realizes some economies of size through consolidated offerings. The current financial condition of some districts is such that bond buyers would probably not accept their debt if it were issued without joint and several liability. Even healthy districts might not find a market for their bonds if potential purchasers were concerned about the liquidity of their securities.

Joint and Several Liability and System Viability. The basic question to be answered is whether or not the financial viability of the system and its component parts would be enhanced by the elimination of joint and several liability. The answer to this question depends, in large part, on the reaction of the bond market to such a change. A key determinant of the reaction would be whether or not the system retained agency status after joint and several liability ceased.

Some analysts argue that the primary reason for the narrow spreads between FCS and Treasury interest rates is the FCS's agency status rather than the existence of joint and several liability. The experiences of the 1980s (relatively small increases in the interest rate spread despite reluctance on the part of FCS entities to transfer capital to financially strapped institutions, followed by government intervention) provide persuasive arguments for the primacy of agency status.

Perhaps the most powerful argument for retention of joint and several liability is that under the emerging institutional structure, the likely costs associated with joint and several liability decline but its benefits are undiminished. Specifically, if the minimum capital standards and the insurance fund function as planned, the likelihood of having to activate the joint and several liability provisions will be diminished. At the same time, joint and several liability will continue to generate economies of scale and the benefits of a geographically diverse lending base.

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[18] If joint and several liability were removed, each district would offer its own bonds. If its cost of funds depended more on the quality of its loan portfolio and its level of capital than the system's cost of funds does today, it would have a greater incentive to employ sound business practices.

Eliminate or Consolidate District Banks

At the time the FCS was created, communications and transportation networks were much less well developed than they are today. Given the ease and sophistication of today's communications networks and information systems, the need for 12 district banks is less evident than it was in 1916. This assessment is further strengthened by the migration of lending authority to the local associations and away from the district banks. The responsibilities now vested in the district banks (oversight, coordination, market analysis) would still be necessary if they were eliminated, but might be carried out by a national-level institution or by a smaller number of regional banks.

The primary benefit to be expected from eliminating or consolidating district banks would be to reduce the overhead of the system. Either change would, presumably, result in fewer total employees within the FCS and would reduce the number of boards of directors. The volume of loans held by the FCS has declined substantially since the early 1980s, as shown in Figure 1. The greater work load associated with the financial crisis of the mid-1980s did not permit the work force at the FCS to shrink by a like amount, and FCS operating costs rose substantially. While operating costs have declined in recent years, they remain high relative to FCS historical levels. For example, operating expenses were slightly more than 1 percent of gross loans in 1984--the beginning of the system's period of financial troubles. In 1986 they were 1.8 percent of gross loans and had declined only to 1.5 percent by 1990. The May 1990 Treasury report on GSEs suggested that FCS institutions would have a difficult time competing in the agricultural lending market unless they were able to reduce their operating expenses.[19] Eliminating or reducing the number of district banks should help to cut these costs.

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[19] Department of the Treasury, *Report of the Secretary of the Treasury*, p. D-21.

Some disadvantages would be associated with eliminating district banks. The coordinating functions of the banks, such as managing securities sales, would probably not suffer from such a reorganization, but their supervisory functions could be adversely affected. The greater physical distances between the local associations and the next level in the FCS hierarchy would mean that more of the supervision would have to be done electronically. This could be expected to increase the burden on the FCA to ensure that operations of the associations were safe and sound.

In addition, many people would be concerned about the effect of greater centralization on the underlying cooperative nature of the system. As noted at the outset, one of the goals of the FCS has been to increase the control farmers have over their sources of credit. The cooperative form of business is founded on the principle of ownership and control by those who use it. Eliminating the district banks could undermine local control, at least in perception, by centralizing more of the functions of the cooperative. Currently, each of the districts has a somewhat individual corporate culture that reflects the preferences of the farmers it serves. One of the stumbling blocks in the mergers suggested by the 1987 Agricultural Credit Act has reportedly been a reluctance on the part of members of one district to risk a change in their operating procedures that might result from a merger.

Finally, the diverse financial condition of the various parts of the system creates another major obstacle to voluntary mergers. Specifically, the allocation of bad assets among potential partners poses a serious difficulty. When a commercial bank or a thrift gets into financial difficulties and is forced to merge with a healthier institution, the nonperforming assets are absorbed or subsidized by the Federal Deposit Insurance Corporation. The Farm Credit System does not currently have a comparable institutional mechanism for dealing with bad assets. This means that bad assets would have to be written off by reducing the equity of the members of one or both of the merging institutions.

Insurance Fund Issues

The 1987 act requires that each district make payments into the insurance fund until such time as the fund equals 2 percent of total assets. The board of directors of the insurance fund can increase the size of the fund if they conclude that this is necessary to ensure its actuarial soundness. The analysis developed in this chapter suggests that the 2 percent minimum level might not be sufficient to absorb the system's losses and enable it to be adequately capitalized if a significant downturn in the farm economy occurred in the next few years. The analysis also implies that, because of the experiences of the 1980s, the system's vulnerability to a downturn in the agricultural economy will be greatest during the next few years. The first conclusion suggests that the target of 2 percent of FCS assets may be insufficient. The analysis also raises several issues about the insurance fund's premium structure.

Adequacy of the Size of the Insurance Fund. The scenario developed above indicated that the insurance fund might not be large enough to cover the losses accompanying a major downturn in the farm economy. However, if the system experienced the stresses outlined in the scenario, measures would probably be taken to prevent the large losses projected in three districts from bleeding the insurance fund. The FCA would probably make the difficult decision to place one or more of these districts into receivership, as was done with the Jackson Federal Land Bank during the 1980s crisis.

Two arguments could be advanced for requiring the insurance fund to be somewhat greater than 2 percent in the near term. First, having a larger fund might be prudent in order to allow the three districts that were projected to have a relatively significant capital shortfall in the scenario analyzed above to be recapitalized. Second, beginning in the year 2003, the system will be liable to repay all of the bonds issued by the Financial Assistance Corporation. Analysis suggests that some districts may have difficulty meeting those obligations and remaining in compliance with their capital standards. It might be wise to have sufficient resources in the insurance fund to enable them to cover their obligations for FAC debt without falling out of compliance or defaulting.

Increasing the size of the insurance fund could adversely affect the financial condition of the FCS, increase borrowers' costs, or both. If competitive pressures are such that the FCS cannot pass the cost of the insurance fund on to its borrowers, the system will incur an additional cost at a time when it is just regaining its financial footing. On the other hand, if its borrowers bear some or all of this additional cost, they will pay more for loans obtained from the FCS.

Structure of Insurance Premiums. A related option would be to allow the board of the Insurance Corporation to alter the premium structure required by the 1987 Agricultural Credit Act. Such an action could be justified for two reasons. First, as argued above, the FCS poses the greatest risk to the U.S. Treasury during the next few years. After this transition period, the FCA's minimum risk-based capital standards and a fully funded insurance program will reduce the probability of the FCS again requiring federal assistance. A case could be made for shortening this transition period by increasing the speed with which the target level for the insurance fund is reached. This would necessitate an increase in the insurance premiums.

Second, the current premium schedule may not give FCS institutions the desired incentives to balance the risks and returns of the loans they make. Experience may show that the current premium structure is not sufficiently graduated to cause FCS lenders to refrain from excessively speculative lending (or, perhaps, that the differences are unnecessarily large for this purpose). Under this option, the board would be able to adjust the rates in an effort to give FSC institutions the desired incentives.

Allowing the Insurance Corporation to alter the premium structure could have undesirable consequences. The primary argument against doing so is that there is little evidence to suggest what the appropriate structure ought to be in order to achieve a desired reduction in excessively risky lending. As a result, changes in the rates would be ad hoc and might do more harm than good. Also, if the rates were increased so that the size of the fund increased more rapidly, the concern noted above about increasing the target size of the fund would also apply--that increasing the FCS's cost of doing business will inevitably decrease its competitiveness, its market share, and its ability to fulfill its public purpose.

Adequacy of the FCA's Authority to Regulate Farmer Mac

As noted above, the FCA has more limited statutory authority with respect to Farmer Mac than it has with respect to other FCS institutions. Although the FCA could use its enforcement powers to respond to any financial problems that might develop at Farmer Mac, it would seem to be unable to take preventive measures, such as prospectively defining unsafe and unsound practices or setting capital standards, to ensure that Farmer Mac operates in a safe and sound manner from the start. If Farmer Mac got into difficulty, the FCA might also not be able to appoint a conservator or receiver in order to minimize the government's losses. The question can be raised whether the FCA has enough authority to assure the safe and sound operation of Farmer Mac and to minimize the government's exposure to risk.

In setting the 10 percent reserve requirement for securities guaranteed by Farmer Mac and limiting the FCA's statutory authority over it, the Congress has indicated a desire to retain responsibility for setting the guidelines within which Farmer Mac must operate, rather than delegating that task to the FCA. This approach is thought to strike the appropriate balance between allowing Farmer Mac to exercise its judgment about its business practices and the credit risk exposure it is willing to accept, and ensuring that its activities do not expose the government to excessive risk. Until Farmer Mac is fully operational, the current situation appears to entail little risk. However, if Farmer Mac generates a significant volume of business, the adequacy of the FCA's authority could become a more prominent issue, particularly if Farmer Mac experienced losses on any securities it had guaranteed.

The most straightforward way to strengthen the FCA's authority over Farmer Mac would be to give it statutory authority equivalent to a federal bank regulator with respect to Farmer Mac. If the FCA used a broader grant of authority to prospectively define unsafe and unsound practices and to set capital standards for Farmer Mac, the corporation's freedom would be restricted, although it would probably continue to function. An alternative approach would be to require the FCA to report promptly to the Congress on any practices of Farmer Mac that posed an unreasonable risk to the government.

Reforms Proposed in the Administration's Fiscal Year 1992 Budget

The President's budget for fiscal year 1992 suggested a number of reforms for the FCS: requiring separate boards for the FCA and the Insurance Corporation; indexing variable-rate loans to rates on Treasury debt of comparable maturity; requiring assisted system institutions to repay loans from the Financial Assistance Corporation (rather than allowing them not to repay); and reducing the number of districts from 12 to no more than 5. Because consolidating the district banks was examined earlier in this chapter, the discussion below is limited to the Administration's first three proposals.

Some of the suggestions offered in the President's budget appear to be largely management issues rather than broad policy issues. The FCA or the system itself would seem to be better placed to make decisions about these issues. For instance, there may not be as much potential for conflict between the FCA's duty to supervise the system and the Insurance Corporation's function of absorbing losses as the Administration has suggested. If the perception of a conflict did arise, the system might be expected to request a structural change in the insurance board, since the FCS would have to recapitalize the fund if its balance had to be used to cover losses at institutions that had been inadequately supervised by the FCA. (Federally insured commercial banks and thrifts have not taken this type of self-protective action in an attempt to prevent potential increases in deposit insurance premiums, however.) Another consideration is that if the FCA and the Insurance Corporation maintained separate boards and examining capacities, the system's costs would be higher in the long run.[20] Lowering costs was one of the primary reasons offered for reducing the number of FCS districts. Finally, there is some concern that the Insurance Corporation does not have an adequate staff under its control--a problem that could be remedied by requiring it to hire more staff.

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[20] The operating costs of the insurance fund would be paid out of the premiums charged to FCS institutions, so the direct operating costs of the system would not increase if the insurance fund had a separate board and operating authority. Rather, the increased costs would be in the form of a longer period during which the insurance fund was short of its target level.

The President's budget suggests that variable-rate loans made by the system be indexed to Treasury rates as a means of reducing interest rate risk. Such a change would make the rate decision on FCS loans more mechanical but could transform interest rate risk into credit risk if borrowers were less likely to service debt at higher rates of interest. Beyond that, such indexing would be an effective means of reducing interest rate risk only to the extent that the system's cost of funds and the Treasury rates moved consistently. If the FCS's cost of funds diverged from its historical relationship to Treasury rates, as they did during the mid-1980s, strict indexing could actually increase the system's exposure to interest rate risk.

There are two arguments for requiring repayment of Financial Assistance Corporation debt. First, if FCS institutions defaulted on any obligations to the FAC, the insurance fund would be drawn down to repay the bonds, reducing the protection it provided to the federal government, at least in the short term. Failure to repay assistance subjects the institution to a penalty dividend rate that will provide an incentive to repay. Second, full repayment of FAC debt would also be in the interest of the system as a whole if capital markets perceived failure to repay as a sign of financial weakness.

Requiring assisted institutions to repay FAC debt could cause the preferred stock issued to FAC to be reclassified as a liability under GAAP. This could cause the institutions to fail to comply with the FCA's minimum capital standards.

Moving the FCA into a New Agency Responsible for Supervising All GSEs

As discussed in Chapter II, one option for reforming federal regulation of GSEs would be to create a new agency and give it responsibility for supervising the safety and soundness of all the enterprises. The FCA and the FCS Insurance Corporation would be moved into this new agency, their boards would be abolished, and the responsibility for making decisions about regulation of the FCS, including Farmer Mac, and for disbursing funds from the insurance fund, would be lodged in the board of the new agency. Supervision of Farmer Mac would reside in a division of the agency that would handle all GSEs that serve lenders. Because the FCS consists of primary lenders, supervision of system institutions would be in a separate division.

Moving supervision of the FCS to a new, centralized GSE regulator probably would not reduce the cost to the system of federal supervision of its activities. The FCS's decentralized structure, focus on direct lending, and ties to agriculture make it quite different from the other GSEs. As a result, a new agency probably could not achieve economies of scale by monitoring and examining the FCS in the same way that it would other GSEs.

A centralized supervisor of the GSEs' safety and soundness could decide that all of the enterprises should meet a uniform standard with respect to the risk posed to the government. Because all the other enterprises are substantially less risky than the FCS, a uniform standard could lead the agency's board to impose higher capital standards on FCS institutions than the FCA has put in place, or to seek authority to increase the size of the insurance fund or impose higher premiums, in order to reduce the government's exposure. Such actions would make the system less competitive and reduce its ability to fulfill its policy mission.

CHAPTER IV

FEDERAL NATIONAL MORTGAGE ASSOCIATION AND FEDERAL HOME LOAN MORTGAGE CORPORATION

The Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) are the largest government-sponsored enterprises (GSEs). They are integral components of the nation's housing finance system and dominate the secondary market for the conventional home mortgages that they can purchase. The reduced role of thrift institutions and the wave of mortgage refinancings of the 1980s enabled these GSEs to increase their activities dramatically in the second half of that decade. At the end of 1990, they had financed nearly $740 billion in conventional and federally insured or guaranteed home mortgages, more than two and one-half times the level at year-end 1985. The two enterprises have issued or guaranteed three-quarters of all outstanding GSE securities.

Fannie Mae and Freddie Mac use a variety of techniques to limit their exposure to risk. The mortgages they finance are protected by borrowers' down payments, property appreciation, insurance, and agreements with lenders. Because their loan portfolios are nationally diversified, the most serious threat to their financial condition would be from default losses caused by a prolonged, nationwide recession or depression. Both enterprises appear to have enough capital to withstand such a downturn for an extended period. Although Fannie Mae takes some interest rate risk, its exposure declined dramatically in the 1980s, and it maintains a significant amount of capital to cover this risk. Freddie Mac takes much less interest rate risk than Fannie Mae. Both GSEs have been consistently profitable in recent years and will be able to increase their capitalization significantly in the next five years without issuing additional stock.

The Department of Housing and Urban Development (HUD) has general regulatory authority and some program regulatory authority over Fannie Mae and Freddie Mac. Substantial questions remain, however, about whether the department has sufficient statutory authority and institutional capacity to assure that the GSEs are adequately capitalized and operate in a safe and sound manner.

This chapter discusses the role that Fannie Mae and Freddie Mac play in the housing finance system, examines their exposure to credit risk and interest rate risk, and analyzes their capitalization and the degree to which they expose the federal government to risk. The chapter also examines HUD's supervision and regulation of the two GSEs' activities, policy options that would improve the department's ability to assure their safe and sound operation, and the potential effects of requiring them to increase their capitalization.

The analysis is based on data provided by Fannie Mae and Freddie Mac. CBO has not assessed the exposure to management and operations risks of either GSE, and therefore has reached no conclusions about their overall risk or capital adequacy. However, given the consistent profitability of each enterprise in recent years and the incentives provided by their publicly traded stock, currently these risks probably are not significant. To be confident about the enterprises' overall exposure to risk and their capitalization, the government would have to conduct a thorough examination of their operations in order to verify the data they provided and to assess their exposure to management and operations risks.

FANNIE MAE AND FREDDIE MAC IN THE HOUSING FINANCE SYSTEM

Fannie Mae and Freddie Mac provide a link between lenders that make home mortgages and the capital markets. This section discusses the public purposes and activities of the enterprises, their historical development and performance, the expansion of their market share, and the economic effects of their activities.

Public Purposes and Activities

Fannie Mae and Freddie Mac have several public purposes, which were explicitly restated in the Financial Institutions Reform, Recovery, and

Enforcement Act of 1989 (FIRREA). Together with the other GSE that supports lending for home mortgages, the Federal Home Loan Bank System, they smooth out regional imbalances in the supply of mortgage funds and integrate local and regional mortgage markets into the capital markets. Fannie Mae and Freddie Mac also increase the efficiency of the secondary market for conventional mortgages. Further, the two enterprises devote a portion of their mortgage purchases to the goal of providing adequate housing for low- and moderate-income families, so long as the purchases generate a reasonable economic return.

Mortgage Purchases. Fannie Mae and Freddie Mac support the mortgage markets by purchasing loans originated by primary lenders such as thrifts, commercial banks, and mortgage banks. The GSEs buy primarily conventional, single-family, fixed- and adjustable-rate first mortgages. Most of the fixed-rate mortgages (FRMs) they purchase have maturities of 30 or 15 years; the adjustable-rate mortgages (ARMs) they buy usually have 30-year maturities. However, because interest rates are adjusted frequently on ARMs, they have shorter durations than FRMs of equal maturity. Both enterprises also buy mortgages for multifamily housing and second mortgages, other conventional mortgages that do not have a fully developed secondary market, and loans insured by the Federal Housing Administration (FHA) or guaranteed by the Department of Veterans Affairs (VA). In addition, Fannie Mae and Freddie Mac buy participation interests in loans held by lenders, under which the GSEs and the lenders share any default losses on a pro rata basis. The enterprises have standard purchase programs for loans that meet their underwriting guidelines, and also negotiate purchases of mortgages or pools of loans. They charge fees to lenders for committing to purchase loans.

The original balances of the mortgages that Fannie Mae and Freddie Mac may purchase are limited by law to specific amounts, which are adjusted each year to reflect the percentage increase (in the year ending the previous October) in the national average purchase price for all conventionally financed homes, as reported by the Federal Housing Finance Board (FHFB). In 1991, the limit is $191,250 for first mortgages on single-family homes. Higher limits are set for loans that finance dwellings for more than one family, and a lower limit exists for second mortgages. Each ceiling is 50 percent higher in Alaska, Hawaii, and Guam. The 1991 limits are 2 percent higher than those that prevailed in 1990. In recent years, the ceilings have increased more rapidly than the median selling prices of existing homes, expanding the proportion of the conventional mortgage market open to Fannie Mae and Freddie Mac.[1] The loans that the GSEs are eligible to purchase are commonly known as conforming mortgages.

Mortgage purchases by Fannie Mae and Freddie Mac increased dramatically in the 1980s, as shown in Table 11. The largest increases were concentrated in two years. The GSEs' purchases jumped nearly fivefold in 1982, when lenders, primarily thrifts, exchanged nearly $33 billion of mortgages for more liquid mortgage-backed securities. Their purchases doubled in 1986, when falling interest rates spurred a huge wave of refinancings of existing mortgages. In 1990, the enterprises bought about $191 billion in loans. Purchases of conventional 30-year and intermediate fixed-rate mortgages accounted for almost 80 percent of this total. Fannie Mae's purchases made up slightly more than 60 percent of the loans financed by the GSEs.

Mortgage-Backed Securities. Fannie Mae and Freddie Mac finance most of their mortgage purchases by issuing guaranteed mortgage-backed securities (MBSs).[2] They sell MBSs to capital market investors, or swap them with lenders in exchange for conforming mortgages. Under Generally Accepted Accounting Principles (GAAP), the mortgages backing these securities are not considered to be assets of the GSEs. Instead, the MBSs are treated as contingent liabilities, since their guarantees expose the enterprises to the credit risk of the mortgages backing the securities. The GSEs earn income by charging fees for guaranteeing the MBSs they issue, and by investing the interest

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1. Between 1985 and 1991, the limit for first mortgages on single-family homes rose from $115,300 to $191,250, an increase of nearly 66 percent. The median selling price of existing homes rose from $75,500 to $95,200, an increase of about 26 percent. Conventional mortgage loans eligible for purchase by Fannie Mae and Freddie Mac increased from 74 percent to more than 80 percent of all conventional loans during those years. See Dwight M. Jafee and Kenneth T. Rosen, "Mortgage Securitization Trends," *Journal of Housing Research*, vol. 1, no. 1 (1990), p. 131.

2. Fannie Mae refers to its mortgage-backed securities as MBSs, and Freddie Mac uses the term mortgage-participation certificates or PCs. This report refers to both as MBSs.

TABLE 11. MORTGAGE PURCHASES BY FANNIE MAE AND FREDDIE MAC, 1981-1990 (In millions of dollars)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
					30-Year Fixed Rate					
Fannie Mae[a]	4,261	20,266	19,054	18,755	27,533	60,784	48,420	30,189	52,066	76,080
Freddie Mac	3,709	23,588	22,220	19,153	33,504	73,209	54,047	27,994	48,480	47,409
					Intermediate Fixed Rate					
Fannie Mae	0	0	79	213	3,019	8,810[b]	15,302	8,478	10,559	19,953
Freddie Mac	0	0	165	801	6,497	22,904	15,097	6,729	8,613	9,393
					Conventional Second					
Fannie Mae	176	1,553	1,408	937	871	498	139	433	520	702
Freddie Mac	8	21	22	18	33	90	69	59	1,207	686
					Adjustable Rate					
Fannie Mae	107	3,210	5,612	8,087	10,736	7,305	10,481	28,269	17,993	14,529
Freddie Mac	27	63	315	767	823	2,262	4,779	7,253	17,835	16,286
					Multifamily					
Fannie Mae	2	9	140	1,106	1,200	1,877	1,483	4,180	4,836	3,181
Freddie Mac	0	0	18	708	1,902	3,538	2,016	1,191	1,824	1,338
					Federal Housing Administration/Department of Veterans Affairs					
Fannie Mae[c]	2,284	901	186	190	482	438	1,784	503	940	698
Freddie Mac	0	0	213	438	1,253	1,471	833	849	631	406
					Totals					
Fannie Mae	6,830	25,939	26,479	29,288	43,841	79,712	77,609	72,052	86,914	115,143
Freddie Mac	3,744	23,671	22,952	21,885	44,012	103,474	76,840	44,075	78,589	75,518

SOURCE: Congressional Budget Office using data from Fannie Mae and Freddie Mac.

NOTE: n.a. = not applicable.

a. Includes FHA/VA mortgages financed with mortgage-backed securities (MBSs).

b. Intermediate fixed-rate mortgages financed with MBSs only. Portfolio purchases of intermediate fixed-rate loans are included in the 30-year, fixed-rate category in this year.

c. Includes only FHA/VA mortgages retained in portfolio.

and principal payments received from borrowers for the short period before payments are remitted to investors in MBSs. Both GSEs issue MBSs backed primarily by conventional mortgages (intermediate- or long-term, fixed- or adjustable-rate, single-family loans, and long-term multifamily loans). FHA-insured mortgages and VA-guaranteed loans account for only a small portion of the collateral of some of the GSEs' mortgage-backed securities.

An investor in a Fannie Mae or Freddie Mac MBS is entitled to a fixed fraction of all the interest and principal payments received on the mortgages in the pool backing the securities. The amount of the fraction equals the proportion of the MBS issue owned by the investor. Fannie Mae guarantees the timely payment of principal and interest on its MBSs. Freddie Mac guaranteed timely payment of interest and ultimate payment of principal on its MBSs until 1990, when the GSE began issuing enhanced MBSs that provide both a guarantee of timely payment and a more rapid remittance of funds. Investors in MBSs previously issued by Freddie Mac can convert the securities to the enhanced version for a fee.

The implicit federal guarantee of MBSs issued by Fannie Mae and Freddie Mac enhances the credit quality of the securities. The guarantee and the large outstanding volume of the MBSs also make them much more liquid--rapidly convertible to cash--than MBSs issued by wholly private firms. For both reasons, the yields that investors require on Fannie Mae and Freddie Mac's securities backed by fixed-rate mortgages are, on average, about 0.2 to 0.3 percentage points less than the yields on comparable securities issued by wholly private firms that carry a double-A rating, which is the rating most commonly given to such securities.

REMICs. Fannie Mae and Freddie Mac also issue mortgage-related securities such as real estate mortgage investment conduits (REMICs).[3] For a fee, the GSEs also guarantee REMICs issued by other financial institutions. REMICs are backed either by pools of mortgages or mortgage-backed securities and are sold in different classes. The securities in each class may differ in various ways, for example, in the priority with which investors receive principal payments on the collateral, in whether the interest rate on securities in the class is fixed or variable, or in whether interest is paid when due or is accrued. Issuers of REMICs can tailor these features to attract investors with different preferences. Over one-half of the MBSs issued by each GSE in 1990 went into REMICs, which have brought more investors into the secondary mortgage market.

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[3] Freddie Mac pioneered the original type of mortgage-related securities, known as collateralized mortgage obligations (CMOs). Issuers must show CMOs as liabilities on their balance sheets, but REMICs may be carried off the balance sheet as contingent liabilities, and have more favorable tax treatment.

Portfolio Lending. Both GSEs issue debt to finance the mortgages and other assets in their portfolios. Fannie Mae funds a sizable portfolio, both as an investment and to maintain the liquidity of mortgages for which there is no well-developed secondary market. Freddie Mac maintains a much smaller portfolio, principally for assembling pools of mortgages for securitization, but also as a means of investing in a small volume of loans that cannot be financed with MBSs. At year-end 1990, mortgages and MBSs retained in portfolio accounted for about 28 percent of the mortgages financed by Fannie Mae; Freddie Mac held about 6 percent of the loans it had financed in portfolio.

Purchases of Mortgages for Low- and Moderate-Income Housing. Fannie Mae and Freddie Mac purchase mortgages that finance housing for low- and moderate-income families. Current HUD regulations, which were issued in 1978, define such loans to include certain FHA-insured or federally subsidized mortgages, and loans financing single-family dwellings purchased at prices that do not exceed 2.5 times the Bureau of the Census's estimate of the median family income for the standard metropolitan statistical area (SMSA). The government no longer uses the SMSA designation, but divides urban areas into metropolitan statistical areas (MSAs) and primary metropolitan statistical areas (PMSAs), which are aggregations of several MSAs. In the fourth quarter of 1989 and the first quarter of 1990, Freddie Mac purchased about 0.4 million conventional, single-family mortgages on units in all MSAs. Thirty-seven percent of these loans met the HUD definition. In 1990, Fannie Mae purchased 1.1 million conventional, single-family loans on units in the 300 largest MSAs and PMSAs. Over 36 percent of those loans met the HUD definition.[4]

Historical Development and Performance

Although Fannie Mae and Freddie Mac have very different histories, today they have essentially the same statutory authorities and federal oversight. Both enterprises also have been consistently profitable in recent years.

History. In 1934, the government authorized the chartering of privately owned, federally supervised national mortgage associations to purchase and sell FHA-insured home mortgages. No associations were created, however, and the Reconstruction Finance Corporation chartered the Federal National Mortgage Association in 1938 to buy and sell FHA-insured mortgages and to finance its activities by borrowing from the Treasury or the public. Ten years later the association was authorized to invest in mortgages insured by the Veterans Administration.

The Congress reorganized Fannie Mae and gave it a statutory charter in 1954. Its authority was expanded to encompass three principal activities: providing liquidity to the secondary mortgage market, providing special assistance to certain types of mortgages, and managing and liquidating the portfolio of mortgages it had previously acquired. The Congress also began the process of shifting Fannie Mae to private ownership, a process that would be accomplished by requiring each mortgage seller to purchase a certain amount of common stock based on the amount of loans it sold to Fannie Mae, so that preferred stock owned by the Treasury could be gradually retired.

The Housing and Urban Development Act of 1968 completed the transformation of Fannie Mae into a government-sponsored enterprise. The act created the Government National Mortgage Association (Ginnie Mae), an agency within HUD, to perform the special assistance and management and liquidation functions previously assigned to Fannie Mae. Fannie Mae was reconstituted into a federally chartered corporation owned by shareholders and governed by a 15-member board of directors, five of whom were to be appointed by the President.[5] The new enterprise retained the statutory purpose of providing supplementary assistance to the secondary mortgage market, was placed under the regulatory oversight of HUD, and was authorized to issue mortgage-backed securities.

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[4] The percentages assume the Census Bureau's estimate of median family income in 1990. An alternative approach would estimate the percentage of loans purchased that met the HUD definition in the year they were originated.

The Emergency Home Finance Act of 1970 authorized the creation of Freddie Mac to provide a secondary market for conventional home mortgages. The legislation gave Fannie Mae parallel authority to purchase conventional loans. Until 1989, Freddie Mac was owned by the Federal Home Loan Bank (FHLB) System and its member thrift institutions and governed by the members of the FHLB Board. FIRREA severed Freddie Mac's ties to the FHLB system, created an 18-member board of directors to run the GSE, and subjected it to HUD regulation. Today, Fannie Mae and Freddie Mac have the same public purposes and federal oversight, and there are only minor differences in their statutory authorities. Both enterprises are subject to federal income taxation.

Performance. Although Fannie Mae has been consistently profitable in recent years, the GSE suffered losses in the early 1980s, and its viability was in doubt for a time. Fannie Mae had financed a portfolio of long-term mortgages with short-term debt, exposing it to considerable interest rate risk. When interest rates rose sharply in 1979 and 1980, the interest expense on the GSE's portfolio rose significantly, its net interest income (interest income less interest expense) became negative, and it became deeply insolvent on a market value basis.[6] From 1980 through 1985, the enterprise experienced losses in four out of the six years.

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[5] The board was later expanded to 18 members, five of whom are appointed by the President.

[6] HUD has estimated that Fannie Mae's mark-to-market net worth--the market value of its assets minus the market value of its liabilities--was negative at the end of 1979 through 1984. At the end of 1981, the GSE's mark-to-market net worth was estimated to be negative $10.8 billion, nearly 20 percent of the market value of its assets. See Department of Housing and Urban Development, *1986 Report to Congress on the Federal National Mortgage Association* (September 1987), p. 100.

TABLE 12. FANNIE MAE's CONSOLIDATED BALANCE SHEETS AND INCOME STATEMENTS, 1981-1990
(In millions of dollars)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Balance Sheet										
Assets										
Net Mortgage Portfolio[a]	59,526	69,228	75,130	84,038	94,497	93,949	93,470	99,867	107,756	113,875
Cash and Investments	1,066	2,453	1,719	1,889	1,929	1,862	5,925	8,148	11,870	14,046
All Other Assets	986	1,300	1,534	1,871	2,650	3,810	4,064	4,243	4,689	5,192
Total	61,578	72,981	78,383	87,798	99,076	99,621	103,459	112,258	124,315	133,113
Liabilities										
Net Debentures, Notes, and Bonds										
Due within one year	17,365	25,781	26,860	31,261	31,939	31,294	29,718	36,599	36,346	38,453
Due after one year	41,186	43,833	47,734	52,458	62,046	62,269	67,339	68,860	79,718	84,950
All Other Liabilities	1,947	2,414	2,789	3,161	4,082	4,876	4,591	4,539	5,260	5,769
Total	60,498	72,028	77,383	86,880	98,067	98,439	101,648	109,998	121,324	129,172
Stockholders' Equity										
Common Stock	374	414	416	416	460	465	516	517	520	522
Additional Paid-in Capital	268	302	308	308	372	448	773	777	787	810
Retained Earnings	440	239	278	196	179	269	617	1,067	1,771	2,772
Less Treasury Stock[b]	-2	-2	-2	-2	-2	c	-95	-101	-87	-163
Total	1,080	953	1,000	918	1,009	1,182	1,811	2,260	2,991	3,941

(Continued)

SOURCE: Congressional Budget Office using data from Fannie Mae.

a. Includes mortgage-backed securities held in portfolio at year-end of $1.6 billion (1986), $4.2 billion (1987), $8.1 billion (1988), $11.7 billion, and $11.8 billion (1990).

b. Represents the cost of stock repurchased by Fannie Mae to manage capital and fund its obligations under its employee stock ownership plan and stock options programs.

TABLE 12. Continued

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Balance Sheet										
Contingent Liabilities										
Mortgage-Backed Securities[a]	717	14,450	25,121	36,215	54,987	97,174	139,960	178,250	228,232	299,833
Capital Ratios (Percent)										
Equity/Assets plus MBSs	1.73	1.09	0.97	0.74	0.66	0.61	0.76	0.80	0.88	0.94
Capital/Assets plus MBSs[d]	1.90	1.25	1.10	0.85	0.76	0.74	0.90	0.94	1.01	1.06
Income Statement										
Net Interest Income	-429	-464	-9	-90	139	384	890	837	1,191	1,593
MBS Guaranty Fees	c	16	54	78	112	175	263	328	408	536
Gain (Loss) on Sales of Mortgages	c	58	118	21	11	31	-81	12	9	7
Net Miscellaneous Income	60	63	56	53	73	83	53	69	60	107
Provision for Losses	27	-36	-48	-86	-206	-306	-360	-365	-310	-310
Administrative Expenses	-49	-60	-81	-112	-142	-175	-197	-218	-254	-286
Pretax Income	-391	-423	90	-136	-13	192	568	663	1,104	1,647
Provision for Federal Income Taxes	185	202	-41	65	6	-87	-192	-156	-297	-474
Extraordinary Item		29								
Net Income (Loss)	-206	-192	49	-71	-7	105	376	507	807	1,173

c. Less than $500,000.

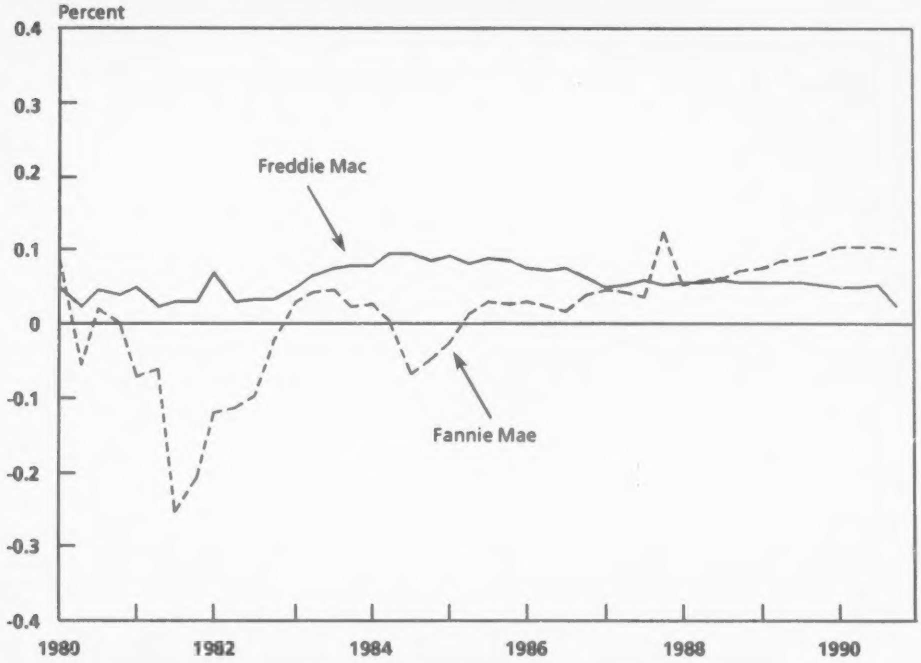
d. Capital equals equity plus reserves.

In 1981, new management began effecting four major changes in business strategy to return Fannie Mae to profitability. First, Fannie Mae ceased to commit to buy mortgages at a fixed price if they were delivered within one year. These commitments had led to losses when interest rates rose. Second, the GSE attempted to reduce its exposure to interest rate risk. The initial step was to begin purchasing mortgages of shorter duration, especially ARMs. Doing so increased the GSE's exposure to credit risk, however, because some ARMs financed at that time had interest rate buydowns and other features that made borrowers more vulnerable to rate increases. The enterprise also shortened the duration of its liabilities to avoid locking in high costs for servicing the debt. This action involved taking some additional interest rate risk, but worked out well when rates declined in 1984. At that point, Fannie Mae began lengthening the duration of its liabilities, which slowed the GSE's return to profitability by increasing its interest expense, but enabled it to make its earnings more stable. Third, to reduce its negative net interest income, the GSE rapidly increased the size of its portfolio between 1981 and 1985. Fourth, it began issuing MBSs in late 1981. MBS guarantee fees provide a stable stream of income that serves as a hedge against fluctuations in the net interest income on the portfolio.

These and other changes in business strategy, as well as favorable movements in interest rates, enabled Fannie Mae to return to profitability. By the end of 1990, the GSE had experienced its fourth consecutive year and twelfth consecutive quarter of record profits. Fannie Mae's performance in the last decade is summarized in Table 12 on pages 130 and 131, which displays its income statements and balance sheets for 1981 through 1990.

Freddie Mac has always been profitable. As shown in Table 13, the GSE's income from its portfolio and MBSs, less financing costs, increased for the ninth straight year in 1990. The enterprise's net, after-tax income increased rapidly from 1981 to 1984. Profits fell in 1985 as a result of incurring a federal income tax liability for the first time, but then resumed large annual increases through 1989. In 1990, earnings declined slightly because of a one-time additional provision of $100 million to cover potential losses on the conventional, multifamily mortgages financed by Freddie Mac.

Figure 4.
Quarterly Pretax Income of Fannie Mae and Freddie Mac as a Percentage of Assets and Mortgage-Backed Securities



SOURCE: Congressional Budget Office using data from Fannie Mae and Freddie Mac.

The GSEs' profits provide a useful summary of their performance over time. Figure 4 shows the quarterly pretax income of each enterprise as a percentage of all assets and MBSs. The fluctuations in Fannie Mae's pretax income per dollar of assets early in the decade reflect the accounting recognition of losses resulting from high interest rates. Its pretax income per dollar of assets has been consistently positive since 1985 (when income from MBS guarantee fees became substantial), has increased steadily since mid-1986, and, since mid-1988, has been higher than Freddie Mac's.[7] The latter's pretax income per dollar of assets was fairly consistent throughout the period.

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[7] Fannie Mae experienced a large, one-time increase in earnings in the fourth quarter of 1987 as a result of a new accounting standard for recognizing fee income from mortgage purchase commitments.

TABLE 13. FREDDIE MAC's CONSOLIDATED BALANCE SHEETS AND INCOME STATEMENTS, 1981-1990
(In millions of dollars)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Balance Sheet										
Assets										
Net Mortgage Portfolio	5,169	4,649	7,447	9,968	13,486	13,012	12,258	16,815	21,328	21,395
Cash and Temporary Investments	629	756	712	710	687	3,612	4,670	5,525	5,396	6,808
Mortgage Securities Purchased Under Agreements to Resell	0	0	0	1,513	509	4,495	5,859	9,107	5,765	9,063
All Other Assets	528	594	758	933	1,617	2,110	2,887	2,905	2,973	3,313
Total	6,326	5,999	8,917	13,124	16,299	23,229	25,674	34,352	35,462	40,579
Liabilities										
Principal and Interest Due on MBSs	204	546	953	1,188	2,247	5,958	4,192	5,011	6,670	6,427
Debt Securities										
Due within one year	1,533	1,275	2,146	4,467	3,760	6,556	11,777	18,482	16,385	19,697
Due after one year	3,537	2,928	2,712	2,355	2,646	1,853	1,509	1,620	2,426	3,991
Repurchase Agreements	410	320	255	150	200	0	523	0	0	0
Multiclass Securities										
Due within one year	0	0	36	190	375	659	351	265	289	262
Due after one year	0	0	1,633	3,024	4,773	4,310	3,301	4,479	5,003	4,425
All Other Liabilities	392	634	760	1,144	1,519	2,940	2,839	2,911	2,774	3,641
Total	6,076	5,703	8,495	12,518	15,520	22,276	24,492	32,768	33,547	38,443

(Continued)

SOURCE: Congressional Budget Office using data from Freddie Mac.

a. Capital equals equity plus reserves.

b. Equals interest and discount on mortgages plus interest on investments and management and guarantee income (from mortgage-backed securities (MBSs)), minus interest and related debt expenses.

TABLE 13. Continued

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Balance Sheet *Stockholders' Equity*										
Common Stock										
Nonvoting	100	100	100	100	100	100	100	100	100	0
Voting	0	0	0	0	0	0	0	0	150	150
Preferred Stock	0	0	0	150	150	150	150	150	0	0
Additional Paid-in Capital	100	100	100	0	0	0	0	104	105	107
Retained Earnings	50	96	221	356	529	703	932	1,230	1,560	1,879
Total	250	296	421	606	779	953	1,182	1,584	1,915	2,136
Contingent Liabilities										
Mortgage-Backed Securities	19,897	42,952	57,720	70,026	99,909	169,186	212,635	226,406	272,870	316,359
Capital Ratios (Percent)										
Equity/Assets plus MBSs	0.95	0.60	0.63	0.73	0.67	0.50	0.50	0.61	0.62	0.60
Capital/Assets plus MBSs[a]	1.29	0.82	0.84	0.94	0.85	0.65	0.64	0.76	0.77	0.77
Income Statement										
Net Interest Margin on Portfolio[b]	70	107	257	371	500	600	791	957	1,089	1,273
Other Income	8	16	6	21	22	72	14	-5	16	7
Provision for Losses	-17	-26	-46	-54	-79	-120	-175	-204	-260	-450
Administrative Expenses	-30	-37	-53	-71	-81	-110	-150	-194	-217	-243
Pretax Income	31	60	164	267	362	442	480	554	628	587
Provision for Federal Income Taxes	0	0	0	0	-164	-195	-179	-173	-191	-173
Extraordinary Item	0	0	-4	0	10	0	0	0	0	0
Net Income (Loss)	31	60	160	267	208	247	301	381	437	414

Expanding Market Share and Economic Effects

The activities of Fannie Mae and Freddie Mac expanded significantly in the 1980s as the thrift industry became a less important source of financing for mortgages.[8] Although thrifts continued to originate about 35 percent to about 45 percent of all residential mortgages during the decade, the share of outstanding mortgage debt financed by them fell from 46 percent at year-end 1981 to 26 percent in mid-1990 (see Table 14). This trend reflected a change in the incentives for thrifts to hold mortgages. The change was caused by alterations in federal policies, more volatile interest rates, and a decline in the industry's profitability. Fannie Mae and Freddie Mac expanded their shares, as did commercial banks, to fill the gap created by the reduced role of the thrifts. The proportion of residential mortgage debt financed by the enterprises increased from 7 percent to 24 percent in that period. The increase in the GSEs' activities in turn increased the thrifts' incentives to hold MBSs, which took an increasing share of thrifts' portfolios, at the expense of whole mortgages, particularly conforming FRMs.

Changing Role of the Thrifts. In the 1970s and early 1980s, the federal government reduced the tax benefits that had given profitable thrift institutions a significant incentive to invest in home mortgages.[9] The government also eased restrictions on thrifts' investment in other assets such as corporate loans, bonds, or equity, and gradually eliminated the ceilings on the rates payable on deposit accounts. These policies had enabled thrifts to subsidize interest rates on conventional mortgages. Research suggests that rates on conventional FRMs in the

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[8] This section follows Patric H. Hendershott, *The Market for Home Mortgage Credit: Recent Changes and Future Prospects* (National Bureau of Economic Research Working Paper No. 3548, December 1990), which summarizes the literature and provides a useful overview of recent trends and the GSEs' role.

[9] Thrifts had been allowed to compute loan loss reserves that exceeded a reasonable provision for normal losses, as long as the institutions invested a large portion of their assets in housing-related loans or liquid assets. This tax preference permitted profitable thrifts to transfer large portions of their profits to reserves, thereby avoiding federal income taxes. Between 1962 and 1969, the transfer was limited to 60 percent of taxable income. Between 1969 and 1979, the fraction was gradually reduced to 40 percent. The Tax Reform Act of 1986 lowered the fraction to 8 percent.

TABLE 14. PERCENTAGE OF OUTSTANDING RESIDENTIAL MORTGAGE DEBT FINANCED BY DIFFERENT FINANCIAL INSTITUTIONS, YEAR-END 1981-1990

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990[a]
Commercial Banks[b]	15.4	15.2	14.6	14.4	14.1	14.0	13.8	14.2	15.0	15.3
Thrift Institutions[b]	46.2	41.3	40.0	40.2	38.3	34.3	31.8	31.6	28.6	26.4
Other Private Firms[b]	3.0	2.9	2.5	3.8	3.6	3.5	2.9	3.1	3.2	3.2
Households	16.3	17.3	15.9	13.5	13.2	12.9	14.2	13.6	13.9	14.2
Ginnie Mae[c]	9.2	9.9	12.0	12.1	12.7	13.7	14.3	13.8	13.6	13.7
Fannie Mae[c]	5.2	6.9	7.6	8.3	9.1	10.2	10.6	11.4	12.5	13.3
Freddie Mac[c]	2.1	3.8	4.8	5.4	6.8	9.6	10.1	9.9	10.9	11.1

SOURCE: Congressional Budget Office based on data from the Board of Governors of the Federal Reserve System.

NOTES: Thrift institutions include savings banks and savings and loan associations. Other private firms include mutual savings banks, life insurance companies, and finance companies.

a. Data for 1990 is through the second quarter of the year.

b. Excludes investment in mortgage-backed securities of Ginnie Mae, Fannie Mae, and Freddie Mac.

c. Includes loans held in portfolio and backing mortgage-backed securities.

1970s were about 0.3 to 0.7 percentage points below the levels that would have existed without these subsidies.[10]

The changes in federal policy accompanied a sharp decline in the thrifts' profitability. Their strategy of funding long-term mortgages with short-term deposits led to large losses when interest rates rose in the 1979-1982 period. These difficulties were exacerbated by a decline in property values and credit losses during the 1981-1982 recession. These factors, and the thrifts' desire to reduce their exposure to interest rate risk, combined to lessen the incentives for thrifts to hold mortgages, especially those with fixed rates. The change in these incentives caused a short-term reduction in the supply of funds to finance

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10. For the estimates of how much interest rates on FRMs varied from "perfect market" rates in the 1970s and 1980s cited in this paragraph and the next, see Patric H. Hendershott and Robert Van Order, "Integration of Mortgage and Capital Markets and the Accumulation of Residential Capital," *Regional Science and Urban Economics* (May 1989), pp. 188-210.

mortgage assets. Research suggests that this reduction in supply caused rates on conventional FRMs to rise by about 0.5 percentage points in 1982 through 1986 relative to the levels that would have existed if other sources of funds had been immediately available.[11]

Expansion of the GSEs' Activities. This short-term rise in conventional FRM rates induced Fannie Mae and Freddie Mac to expand their mortgage purchases and MBS issues, particularly after the large drop in interest rates in 1986 increased the demand for mortgage funds to refinance existing loans. Their increased activities and their economies of scale in processing information and securitizing mortgages enabled them to achieve a dominant position in the market for conforming FRMs--conventional fixed-rate loans with original balances below the GSEs' purchase limits. The proportion of newly originated conforming FRMs securitized by the enterprises rose from an estimated 4 percent before 1981, to more than 50 percent in 1986 through 1988, and to 69 percent in 1989.

Reduction in Interest Rates on Conforming FRMs. One consequence of Fannie Mae and Freddie Mac's emerging dominance in the conforming FRM market has been a reduction in interest rates on those loans. Since 1986, competition between the GSEs, and increased competition among the mortgage lenders who make loans that the enterprises purchase, has passed through to borrowers a large portion of the reduction in the yields on FRM-backed securities issued by the GSEs. This reduction arises from the implicit federal guarantee and the greater liquidity of the MBSs. As a result, in recent years mortgage lenders have quoted rates on conforming FRMs that are about 0.3 percentage points (30 basis points) lower than the rates on conventional FRMs with higher loan balances that are not securitized by Fannie Mae or Freddie Mac.[12]

Because Fannie Mae and Freddie Mac have not been as active in the conforming ARM market, their purchases and competition among lenders that sell ARMs to them do not appear to have reduced interest rates on those loans. The lower that fixed rates are, both in absolute terms and relative to adjustable rates, the more borrowers prefer fixed-rate mortgages. Both the absolute fall in interest rates on conforming FRMs, and the reduction in the difference between those rates and interest rates on ARMs, have reduced ARMs' share of mortgage originations. This reduction in turn has contributed to the growth in the share of all conforming mortgages purchased by the GSEs.

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[11] Hendershott and Van Order, "Integration of Mortgage and Capital Markets."

[12] Patric H. Hendershott and James D. Shilling, "The Impact of the Agencies on Conventional Fixed-Rate Mortgage Yields," *Journal of Real Estate Finance and Economics*, no. 2 (Kluwer Academic Publishers, 1989), pp. 101-115.

Effects on Thrifts' Activities. The reduction in interest rates on conforming FRMs has lowered the returns that thrifts expect to earn from holding such loans in portfolio, relative to the returns from selling the loans to Fannie Mae and Freddie Mac and servicing them for the GSEs. As a result of this change, increased competition in the thrift industry, and the implementation of risk-based capital requirements for federally insured depository institutions, thrifts in recent years have sold to the enterprises most of the conforming FRMs that they have originated. The capital standards require banks and thrifts to have capital equal to 1.6 percent of their holdings of GSE mortgage-backed securities, and to 4 percent of their investment in whole mortgages, by the end of 1991. The lower capital cost of investing in Fannie Mae and Freddie Mac's MBSs will tend to increase the proportion of outstanding mortgage debt financed with those GSE securities in the future.

Integration of Mortgage Markets into the Capital Markets. The expansion of the activities of Fannie Mae and Freddie Mac in the 1980s enabled them to integrate regional mortgage markets into the capital markets. Evidence for this success comes from research that has found that the speed with which mortgage rates adjusted to changes in capital market rates increased significantly in the 1980s, and that in most years since 1984, mortgage rates have been close to the levels that would exist if the mortgage and capital markets were fully integrated.[13]

Emergence of Issuers of Private-Label MBSs. The recent success of Fannie Mae and Freddie Mac has led wholly private firms to develop a significant capability to securitize residential mortgages. Issuance of private-label MBSs has greatly increased, rising from $2.4 billion in 1985, to $14.2 billion in 1988 and 1989, and to more than $24.3 billion in 1990. Thirty-two firms marketed over 160 issues in 1990. Three firms--Citicorp, Residential Funding Corporation, and Prudential Home Mortgage Securities Corporation--each issued more than $3 billion in MBSs.[14] Wall Street investment banking firms now quote daily prices for some of the larger issues of private-label MBSs. Nearly all of the mortgages backing these securities were nonconforming loans when they were securitized. The implicit federal guarantee and greater liquidity of the GSEs' mortgage-backed securities, their levels of capital, and the enterprises' economies of scale enable them to pay higher prices for conforming loans. As a result, lenders generally are not willing to sell conforming mortgages to private-label issuers.

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[13] Hendershott and Van Order, "Integration of Mortgage and Capital Markets."

The rapid expansion of the private-label MBS market suggests that wholly private MBS issuers might be able to achieve the GSEs' public purposes of smoothing regional imbalances in mortgage funds and integrating mortgage markets into the capital markets. It is not clear, however, that such firms would maintain a secondary market for mortgages originated in all regions of the country at all points in the business cycle, as the GSEs do.

CREDIT RISK

If Fannie Mae and Freddie Mac could predict exactly the rates at which the home mortgages they purchase would default and how much they would lose on each default, they would charge MBS guarantee fees and mortgage purchase prices that covered these costs (plus a markup for profit). At best, the GSEs can use historical data to estimate the average frequency and severity of defaults and to assess how different factors cause rates to vary around these average values from year to year. Because mortgages financed by the enterprises may perform worse than expected, they are exposed to credit risk.

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[14] Financial World Publications, *The Mortgage Market Statistical Annual for 1991* (Washington, D.C., 1990), p. 132.

Fannie Mae and Freddie Mac are exposed to comparable credit risk. Since the major changes in Fannie Mae's underwriting guidelines in 1985, the two GSEs' guidelines for single-family mortgages have been virtually identical, and the single-family loans each has purchased have had quite similar risk-related characteristics and geographic distributions. The performance of the mortgages purchased by each enterprise since 1985 has also been comparable. If Fannie Mae and Freddie Mac continue to compete vigorously, they are likely to continue to be exposed to similar credit risk. Competition induces them to maintain similar underwriting guidelines and prices in order to avoid a deterioration in the quality of the loans they purchase. This section examines how Fannie Mae and Freddie Mac manage and control their exposure to credit risk and discusses indicators of the performance of the loans they have financed.

Management and Control of Credit Risk

Fannie Mae and Freddie Mac control the default losses they expect to incur through underwriting guidelines, property appraisal standards, seller/servicer eligibility requirements and guidelines, and management controls. Consistent with restrictions in their charter acts, they control their actual losses by requiring private mortgage insurance on mortgages with loan-to-value (LTV) ratios in excess of 80 percent, and through agreements with lenders and other credit enhancements.[15] The GSEs also control the variance of losses by taking advantage of geographic diversification.

Underwriting Guidelines and Property Appraisal Standards. The underwriting guidelines issued by Fannie Mae and Freddie Mac are the standards for conforming mortgages. The GSEs require lenders that sell loans to them to assess the borrower's ability and willingness to repay the loan, as indicated by appropriate documentation of his or her employment history, income, financial condition, ratios of mortgage costs and other necessary expenses to income, and credit history. Property appraisal standards require lenders to obtain appraisals of the market value of properties. Sellers must give weight to the appraisal and the borrower's creditworthiness in underwriting a loan.

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[15] A mortgage's LTV ratio is the ratio between the outstanding loan balance and the value of the property.

Seller/Servicer Eligibility Standards. Lenders are eligible to sell mortgages to and service loans for Fannie Mae or Freddie Mac if they meet standards related to financial condition (including net worth), management quality, operations, and insurance coverage. Lenders must follow specific procedures when originating and servicing loans (and in foreclosing on them if borrowers default). Each GSE uses on-site examinations and off-site reporting to monitor lenders' compliance with these standards and the performance of loans they have sold or serviced. The enterprises take into account information on loan performance when pricing new purchases of mortgages from lenders. Box 7 discusses how Fannie Mae and Freddie Mac change their underwriting guidelines, property appraisal standards, and seller/servicer guidelines to limit their exposure to credit risk.

Management Controls. The GSEs use management controls to limit their exposure to credit risk on specific mortgage purchases. Small transactions involving loans that meet their underwriting guidelines are handled routinely. Large purchases and negotiated transactions are reviewed by senior corporate management in the regional or central offices. More than half of each enterprise's recent mortgage purchases have been negotiated transactions.

Credit Enhancements. The charters of Fannie Mae and Freddie Mac allow the GSEs to purchase a mortgage with a loan-to-value ratio greater than 80 percent only if the loan carries credit enhancement (unless the seller has retained at least a 10 percent participation in the loan). The most important form of credit enhancement is private mortgage insurance, which typically covers default losses up to 25 percent of the loan's outstanding balance. The insurance protects the GSEs from a large portion of default losses, so that the cost of default to the enterprises is typically much lower for insured loans. The enterprises must approve and have written eligibility and reporting requirements for private mortgage insurers. Both Fannie Mae and Freddie Mac also improve the quality of loans through recourse agreements, under

BOX 7
Changes in Policy to Limit Exposure to Credit Risk

Fannie Mae and Freddie Mac frequently change their underwriting guidelines, property appraisal standards, and seller/servicer eligibility guidelines in order to limit their exposure to credit risk . For example, in 1985 Fannie Mae eliminated adjustable-rate mortgages (ARMs) with graduated payments and other products that had performed poorly, restricted ARMs with 95 percent loan-to-value ratios, and required a larger down payment and tighter property appraisal standards, among other changes designed to improve the credit quality of new mortgages it purchased.

In 1990, Fannie Mae announced that it would require each lender desiring to sell reduced documentation mortgages--loans accompanied by less certain proof of the borrower's income or employment--to do so only on a negotiated basis. Freddie Mac announced that it would phase out the purchase of mortgages originated with reduced documentation, and would purchase no more than $10 million in mortgages annually from any seller on a nonnegotiated basis.

The GSEs base such decisions on historical data on the performance of different types of loans, of loans made to different types of borrowers, or of loans originated or serviced by different types of lenders, and on judgments about future performance. When one enterprise makes a major change in underwriting guidelines, the other usually follows within a short period to avoid being sold riskier loans by lenders. Since 1985, the two GSEs' underwriting guidelines for single-family loans have been quite similar.

which sellers agree to repurchase loans that default, and by requiring sellers to pledge collateral. Because the federal government requires banks and thrifts to retain the same amount of capital for mortgages sold with recourse as for loans they retain, lenders are less likely to be willing to enter into recourse agreements in the future, and the GSEs will be less able to use this type of credit enhancement. To partially offset this trend, the enterprises are using third-party alternatives, such as spread accounts and pool insurance policies.[16] In addition, both GSEs benefit from FHA insurance and VA guarantees of a few loans, and from the fact that sellers own participation interests in some mortgages. The participations require the enterprises and the sellers to share any default losses on a pro rata basis. Table 15 shows the percentages of mortgages financed by Fannie Mae and Freddie Mac that were covered by credit enhancements at the end of 1990.

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[16] Lenders can deposit mortgage interest payments in excess of interest due to MBS investors in spread accounts, where the funds are available to cover delinquencies or absorb default losses. They also can purchase insurance against a portion of any losses on the mortgages in a pool in excess of losses that are covered by insurance of the individual loans.

Geographic Diversification. Fannie Mae and Freddie Mac also reduce the fluctuation in their earnings and lower the amount of capital they need to hold against their exposure to credit risk by maintaining nationally diversified mortgage portfolios. Geographic diversification decreases the fluctuation of returns because, in most economic environments, default losses on loans originated in one region of the country tend to be offset by earnings on mortgages in other regions. Data on the performance of 300,000 conventional loans originated in 1976 through 1980 and purchased by Freddie Mac suggest that if all the loans financed by the GSE were backed by properties located in only one of its five regions, it would need to have about two to three

TABLE 15. MORTGAGES FINANCED BY FANNIE MAE AND FREDDIE MAC COVERED BY CREDIT ENHANCEMENTS, YEAR-END 1990 (As a percentage of unpaid principal balance)

Type of Credit Enhancement	Fannie Mae Portfolio	Fannie Mae MBSs	Fannie Mae Total	All Freddie Mac
Private Mortgage Insurance	17	18	18	18
Recourse or Collateral[a]	6	28	22	8
FHA/VA	12	4	6	2
Participations[b]	8	2	3	20
Spread Accounts	c	c	c	2
Total	43	52	49	49

SOURCE: Congressional Budget Office using data from Fannie Mae and Freddie Mac.

NOTES: For Fannie Mae, a few mortgage types have been excluded, and month-end estimates of the outstanding balances of some loans have been made.

MBSs = mortgage-backed securities; FHA = Federal Housing Administration; VA = Department of Veterans Affairs.

a. Not also covered by mortgage insurance.

b. Not also covered by recourse agreements.

c. Less than 1 percent.

times as much capital to meet a capital standard based on a credit stress test.[17]

The geographic diversification achieved by Fannie Mae and Freddie Mac affects both mortgage borrowers and the federal government. The GSEs charge the same prices to purchase or guarantee pools of loans from different regions of the country, even though the risk of lending differs by region. This benefits borrowers in regions with more volatile economies, and imposes costs on borrowers in regions that are more stable economically. The government benefits because diversification protects the enterprises from severe downturns in regional economies, such as the decline that occurred in the Southwest in the 1980s. The most serious threat to the GSEs' financial condition arising from default losses would come from a prolonged, nationwide recession or depression. Fannie Mae and Freddie Mac's capital standards, discussed later in this chapter, are therefore intended to enable them to survive such an event.

Indicators of Credit Risk and Loan Performance

Fannie Mae and Freddie Mac assess their exposure to credit risk by monitoring several characteristics of the loans they purchase, the most important being the loan-to-value ratios. The GSEs monitor loan performance by tracking delinquency and foreclosure rates. They establish reserves to cover losses on loans that they expect to default.

Loan-to-Value Ratios. A borrower's equity is the most important determinant of the probability that a mortgage will default. At the time of origination, borrower's equity is very close to one minus the LTV ratio. Consequently, changes in the initial LTV ratios of loans purchased by Fannie Mae and Freddie Mac in each year are good indicators of changes in the credit risk posed by new business. Table 16 shows the percentages of conventional fixed- and adjustable-rate mortgages financing single-family dwellings purchased by Fannie Mae and

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[17] John M. Quigley and Robert Van Order, "Defaults on Mortgage Obligations and Capital Requirements for U.S. Savings Institutions: A Policy Perspective" (mimeograph, April 1990).

TABLE 16. FANNIE MAE AND FREDDIE MAC's CONVENTIONAL SINGLE-FAMILY MORTGAGE PURCHASES AND MBS ISSUES, 1985-1990, BY LOAN-TO-VALUE (LTV) RATIO (In percent)

LTV Ratio	1985	1986	1987	1988	1989	1990	Outstanding as of 12/31/90
Fannie Mae							
Purchases for Portfolio							
Fixed-Rate Mortgages							
Not available	0	0	0	0	0	1	1
0 to 80	78	85	85	82	83	80	75
81 to 90	13	12	11	14	14	14	15
91 to 100	8	4	4	4	3	5	9
Adjustable-Rate Mortgages							
Not available	0	0	0	0	0	0	1
0 to 80	40	61	67	65	69	80	61
81 to 90	24	30	30	32	30	18	26
91 to 100	36	9	3	2	1	2	12
Mortgage-Backed Securities Issued							
Fixed-Rate Mortgages							
Not available	0	0	0	0	0	0	a
0 to 80	72	79	79	77	78	77	77
81 to 90	14	15	16	17	16	16	16
91 to 100	13	6	5	6	6	7	6
Adjustable-Rate Mortgages							
Not available	0	0	0	0	0	0	0
0 to 80	84	85	84	66	74	76	74
81 to 90	14	13	15	32	24	20	24
91 to 100	1	2	1	2	2	4	2
Freddie Mac (All Purchases)							
Fixed-Rate Mortgages							
Not available	0	0	0	0	0	0	0
0 to 80	76	81	82	80	79	83	80
81 to 90	15	14	14	14	15	13	15
91 to 100	8	6	5	5	4	4	5
Adjustable-Rate Morgages							
Not available	0	0	0	0	0	0	0
0 to 80	55	63	61	66	70	70	69
81 to 90	23	26	28	24	22	21	22
91 to 100	22	10	11	10	7	9	9

SOURCE: Congressional Budget Office using data from Fannie Mae and Freddie Mac.

NOTE: For Fannie Mae, LTV ratios are at the time of loan origination. For Freddie Mac, LTV ratios are at the time of purchase by the GSE.

a. Less than 0.5 percent.

Freddie Mac in 1985 through 1990 and outstanding at year-end 1990 that had different LTV ratios. For Fannie Mae, the ratios are at the time of loan origination. For Freddie Mac, the ratios are at the time of purchase by the GSE. Loans with LTV ratios of higher than 80 percent carry private mortgage insurance.

In 1986, the proportion of mortgages with the highest, most risky LTV ratios (greater than 90 percent) purchased by Fannie Mae declined significantly. This change reflected the major tightening of the GSE's underwriting standards implemented in 1985, which was described in Box 7. The proportion of ARMs in the lowest risk category--LTV ratios of 80 percent or less--purchased for Fannie Mae's portfolio increased significantly in 1990. The proportion of FRMs in each category purchased by Freddie Mac was relatively constant over the period. For Freddie Mac's purchases of ARMs, the proportion of loans in the highest risk category declined, and the proportion of loans in the lowest risk category increased, at a relatively consistent rate during the 1985-1990 period.

Repayment of loan principal lowers the LTV ratio of a mortgage and increases the borrower's equity. Appreciation in home prices has the same effect. Consider a $100,000, 30-year FRM used to finance a $125,000 home. If the interest rate on the loan is 10 percent, after five years the outstanding balance has declined to about $96,500. If the property has appreciated at 4 percent per year, the market value of the house has increased to about $152,000. Taking into account amortization and appreciation, the LTV ratio of the mortgage is now about 63 percent. The borrower's equity has increased from 20 percent of the home's value at origination to about 37 percent five years later. In periods of rapid inflation of home prices, appreciation is by far the most important cause of changes in the credit risk of home mortgages.

Freddie Mac has developed its own home price index to estimate the mark-to-market LTV ratios (the LTV ratios at origination plus amortization and home price appreciation) of the mortgages it has financed.[18] The GSE uses the estimated mark-to-market LTV ratios to assess the credit risk of the loans and to determine the adequacy of its capital. The index suggests that annual appreciation in home prices nationwide averaged about 3 percent in 1981 and 1982, 6 percent in 1983 through 1985, and 10 percent in 1986 through 1989, but fell to 2 percent in 1990.

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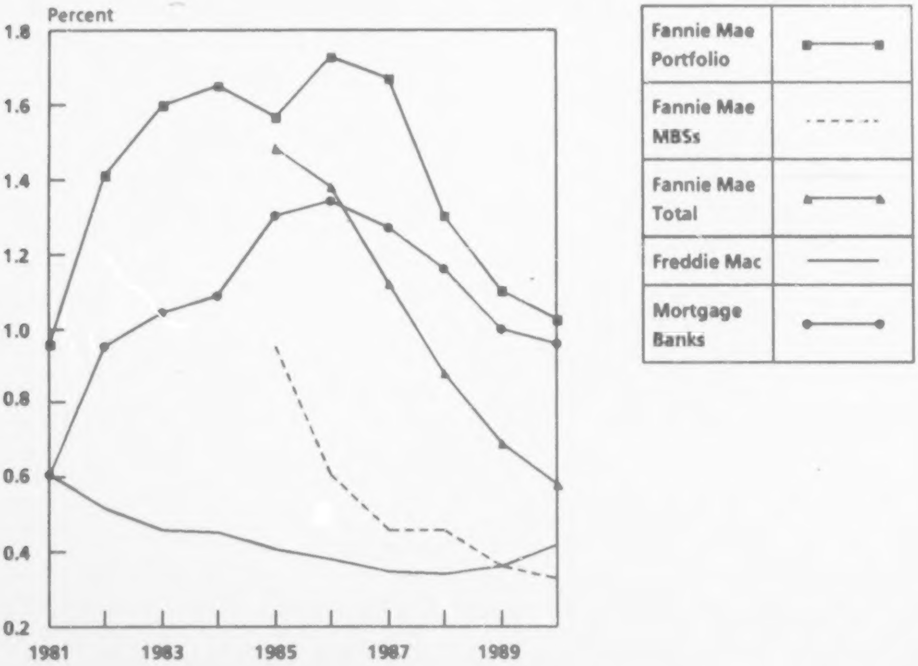
[18] See Jesse M. Abraham and William S. Schauman, "New Evidence on Home Prices from Freddie Mac Repeat Sales" (paper presented at the American Real Estate and Urban Economics Association Midyear Meetings, May 30, 1990).

The inflation of the 1986-1990 period reduced the average estimated mark-to-market LTV ratio of the loans financed by Freddie Mac. The GSE estimates that the mean mark-to-market LTV ratio of the single-family FRMs it financed fell from 61 percent at the end of 1987 to about 54 percent at the end of 1989, and rose to about 56 percent at the end of the third quarter of 1990. The recent increase reflects the slowing of home price appreciation in the last year. At year-end 1990, about 70 percent of the mortgages financed by Fannie Mae and Freddie Mac had been originated before 1989 and, therefore, had experienced at least one year in which home price appreciation had averaged 10 percent.

Delinquency and Foreclosure Rates. Fannie Mae and Freddie Mac monitor the performance of the mortgages they finance by tracking delinquency and foreclosure rates. A loan is seriously delinquent if payments are past due 90 days or more, and in foreclosure when the legal process commences because the borrower has defaulted. Figure 5 compares the rates at which conventional single-family mortgages financed by Fannie Mae, Freddie Mac, and the mortgage banking industry were delinquent or in foreclosure at the end of 1981 through 1990. Fannie Mae's delinquency and foreclosure rates for those loans have been consistently higher than Freddie Mac's. The rates for single-family loans in Fannie Mae's portfolio rose at the end of 1985 and 1986 because many of the ARMs it purchased in 1984 and 1985 had high LTV ratios and so-called teaser rates, that is, interest rates two percentage points or more below what they would have been if the full rate had been in effect. Borrowers who took out loans with teaser rates tended to default more frequently when the full rates went into effect. The delinquency and foreclosure rates for all single-family loans financed by Fannie Mae have been declining steadily since 1986, reflecting changes in the GSE's underwriting standards implemented in 1985 and early 1987, and are significantly below those for the mortgage banking industry, as are those financed by Freddie Mac. At year-end 1990, the delinquency and foreclosure rate for conventional single-family mortgages was 0.58 percent for Fannie Mae and 0.42 percent for Freddie Mac. The rate for single-family loans financed with Fannie Mae's MBSs, the majority of which were originated after the 1985 change in underwriting guidelines, was 0.33 percent.

Figure 5.
Percentage of Conventional Single-Family Mortgages Financed by Fannie Mae, Freddie Mac, and Mortgage Banks That Were Seriously Delinquent or in Foreclosure



SOURCE: Congressional Budget Office using data from Fannie Mae, Freddie Mac, and the Mortgage Bankers Association.

NOTES: A loan is seriously delinquent if payments are 90 days or more past due. For Fannie Mae, the data also include loans on which lenders are exercising forbearance.

Data for the mortgage banks are not seasonally adjusted; 1989 and 1990 figures are from the traditional series.

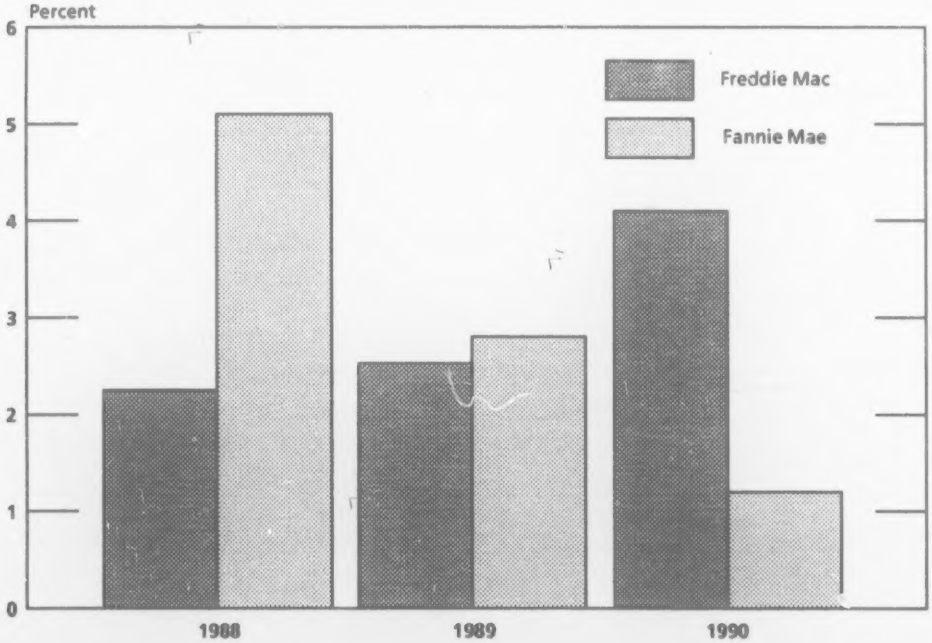
Conventional multifamily mortgages account for a small proportion of the loans financed by Fannie Mae and Freddie Mac. At the end of 1990, Fannie Mae had financed $14.2 billion in such loans and Freddie Mac had financed $11 billion. Fannie Mae had recourse to the lender on $6.7 billion of its mortgages, and 91 percent of the loans with recourse were backed by collateral. The other $7.5 billion was loans for which the GSE was "at risk" for default losses. Figure 6 compares the serious delinquency and foreclosure rates for conventional multifamily loans financed by the GSEs at the end of 1988 through 1990. The rates for Fannie Mae's multifamily loans were higher than those for Freddie Mac's program until 1990, when Fannie Mae's rates declined, and Freddie Mac's increased substantially. Freddie Mac's charge-offs for losses on multifamily loans also increased more than fourfold between 1988 and 1990.

Freddie Mac believes that the performance of its multifamily program deteriorated for three reasons. First, the credit risk of its multifamily portfolio had increased in the second half of the 1980s because it had not adjusted its underwriting guidelines to reflect growing softness in that market. Second, the GSE purchased some multifamily loans from lenders that were not capable of originating and servicing them well. Third, Freddie Mac was not well prepared to handle the volume of delinquencies and foreclosures that occurred. In 1990, the GSE responded to the situation by suspending purchases of most new multifamily loans, adding servicing staff, obtaining appraisals of all multifamily properties with seriously delinquent loans, acting more quickly on delinquent loans, and inspecting properties more frequently. Freddie Mac expects to resume purchasing new multifamily loans once improved management and operating systems are in place.

Loan Loss Reserves. Fannie Mae and Freddie Mac set aside reserves to cover losses on loans that default. Consistent with Generally Accepted Accounting Principles, each GSE maintains its total loan loss reserves at a level that management believes to be sufficient to provide for future losses that can be reasonably estimated. At year-end 1990, Freddie Mac added a special one-time provision of $100 million to its loan loss reserve. The GSE believes that, with this provision, the reserve is sufficient to cover potential losses on its multifamily loans.

Fannie Mae and Freddie Mac charge losses from loan defaults and sales of acquired properties against their reserves. Charge-offs for losses on each GSE's conventional single-family and multifamily programs in the 1981-1990 period followed essentially the same trends as the serious delinquency and foreclosure rates, with some lag to reflect the time required to foreclose on defaulted loans and dispose of acquired properties. In recent years each enterprise's charge-offs have consistently been less than additions to their reserves, resulting in absolute growth in the reserves.

Figure 6.
Percentage of Conventional Multifamily Mortgages Financed by Fannie Mae and Freddie Mac That Were Seriously Delinquent or in Foreclosure at Year-End, 1988-1990



SOURCE: Congressional Budget Office using data from Fannie Mae and Freddie Mac.

NOTE: A loan is seriously delinquent if payments are overdue by 90 days or more.

Pricing Mortgage Purchases and MBS Guarantees

Fannie Mae and Freddie Mac set prices for purchasing mortgages and guaranteeing MBSs in a similar manner. Each GSE uses statistical models to simulate loan prepayments and defaults on pools of different types of loans over a wide range of future economic environments. These estimates are used to calculate the MBS guarantee fees the enterprise must charge--or, for mortgages placed in Fannie Mae's portfolio, the net interest income that the GSE must earn--in order to earn an acceptable return on equity. The estimates assume an initial investment of capital to cover the credit risk of the mortgages. Each enterprise's internal capital standard determines the amount of capital.

INTEREST RATE RISK

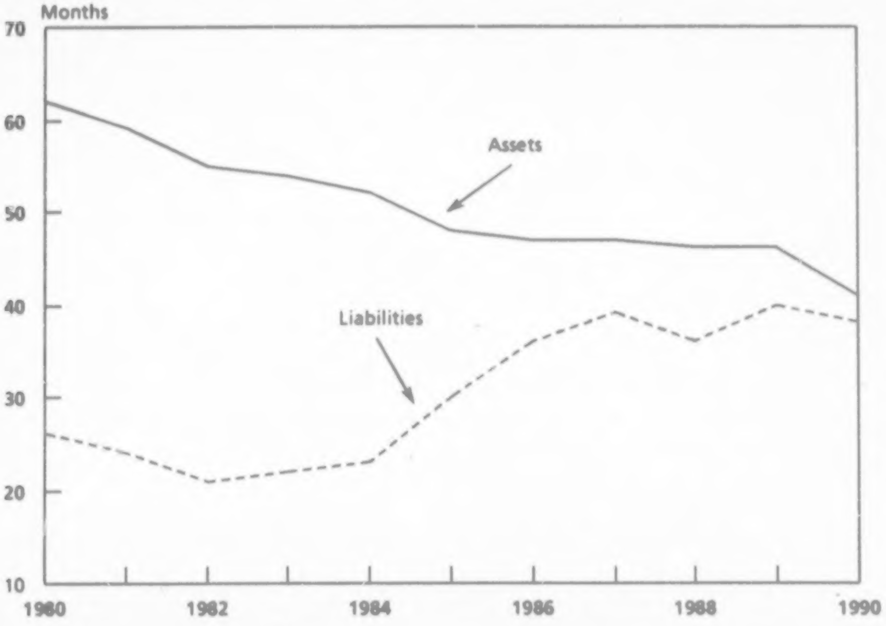
Fannie Mae and Freddie Mac are exposed to interest rate risk from mismatches between the mortgages they hold in portfolio and the debt they issue, and from the options to prepay that mortgage borrowers retain. Fannie Mae is exposed to significantly greater interest rate risk than Freddie Mac. This section explains how each GSE manages, and presents measures of, its exposure to interest rate risk.

Management and Control of Interest Rate Risk

Fannie Mae and Freddie Mac have different strategies for financing the mortgages they purchase and for managing their exposure to interest rate risk. Fannie Mae's strategy is to finance mortgage purchases with debt whenever the GSE expects that the returns from doing so will compensate for taking the additional interest rate risk, and to finance loans with mortgage-backed securities when they do not. Freddie Mac's strategy is to minimize interest rate risk by securitizing almost all the loans it finances.

Fannie Mae's Financing Strategy. Before the 1980s, Fannie Mae financed long-term mortgages with short-term debt. In the 1981-1986 period, Fannie Mae reduced the duration of its assets by purchasing

Figure 7.
Estimated Durations of Fannie Mae's Assets and Liabilities, 1980-1990



SOURCE: Congressional Budget Office using data from Fannie Mae.

shorter-duration mortgages such as ARMs, and lengthened the duration of its liabilities, generally by funding new mortgage purchases with equal-duration debt and by rolling over maturing debt with longer-duration debt. This strategy reduced the gap between the duration of the GSE's assets and liabilities from 35 months at the end of 1981 to 11 months at year-end 1986, as depicted in Figure 7. At that point, the GSE began structuring its debt issues to achieve an overall duration gap of between 6 and 12 months. A small, positive duration gap was necessary to stabilize Fannie Mae's net interest income because it was financing prepayable mortgages with debt that could not be prepaid, or called, before its scheduled maturity date.[19]

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[19] Duration is a measure of the sensitivity of the market values of financial instruments to changes in interest rates. Falling interest rates increase the rates at which borrowers prepay mortgages and shorten the durations of the assets more than rising interest rates reduce prepayment rates and

(Continued)

Since 1988, Fannie Mae has issued callable debt on a regular basis. When interest rates fall, Fannie Mae can retire such debt and reduce its interest expense, which partially matches the fall in its interest earnings resulting from accelerated prepayments of its mortgage assets. During 1990, callable debt accounted for about 70 percent of the enterprise's long-term debt issues. At the end of 1990, callable debt represented nearly 22 percent of the GSE's outstanding long-term debt. The issuance of callable debt enabled Fannie Mae to reduce its duration gap to three months at the end of 1990, as shown in Figure 7. Callable debt increases the GSE's interest expense, since investors require higher interest rates on the instruments, but the ability to retire the debt when interest rates fall and mortgage prepayments accelerate enables it to stabilize its net interest income. Fannie Mae intends to increase the proportion of its liabilities that are callable in order to continue to reduce its interest rate risk.

The relative rates of growth of Fannie Mae's portfolio and mortgage-backed securities reflect management decisions about how to fund the GSE's mortgage purchases. These decisions are based on simulations of the returns from a mortgage purchase financed with debt, over a wide range of future interest rates. If expected average returns are deemed high enough to compensate for taking the risk that changes in rates would lead to low actual returns, the enterprise funds the mortgages with debt. Otherwise, Fannie Mae places the mortgages in a pool and sells mortgage-backed securities.

Freddie Mac's Financing Strategy. Freddie Mac has always sought to minimize its exposure to interest rate risk by securitizing nearly all the mortgages it purchases. In recent years, the GSE has carried out this strategy in two ways. First, it has attempted to finance only 5 percent of its mortgage holdings with debt. Second, Freddie Mac has structured the debt issued to finance its portfolio to minimize the sensitivity of the GSE's mark-to-market net worth--the market values of its assets and income from MBS guarantee fees minus the market value

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19. Continued

lengthen durations. Principal and interest payments must be invested at current market interest rates. Thus, if the duration of Fannie Mae's assets had not been longer than the duration of its liabilities, its net interest income would have declined more when interest rates fell than they would have increased when interest rates rose.

of its liabilities--to changes in interest rates. This approach to measuring and controlling interest rate risk is examined below.

Measuring the GSEs' Exposure to Interest Rate Risk

Fannie Mae and Freddie Mac are exposed to interest rate risk to the extent that changes in market interest rates will reduce their net income. To assess their exposure, a measure of net income must be selected. One possible indicator is the change in the enterprise's estimated mark-to-market net worth. A second is the return that the enterprise will earn on its mark-to-market net worth over a selected investment horizon, or holding period. A third measure is the GSE's net income measured on a GAAP basis over a period that is long enough to capture significant changes in cash flows. All three measures can provide useful information about an enterprise's exposure to interest rate risk.

Fannie Mae and Freddie Mac use these approaches to measure their exposure to interest rate risk. Freddie Mac analyzes the sensitivity of its mark-to-market net worth to instantaneous changes in current interest rates. To decide how to finance the assets in their portfolio, Fannie Mae analyzes holding-period returns to assess their sensitivity to changes in interest rates. The GSE assesses how the after-tax returns on its mark-to-market net worth over a three-year holding period would respond to gradual changes in interest rates. Fannie Mae uses interest rate stress tests to assess the adequacy of its capital. The tests assess how adverse movements in interest rates over a five-year period would affect the enterprise's GAAP net income. The remainder of this section discusses each GSE's estimates of its mark-to-market net worth and its exposure to interest rate risk.

Estimating Mark-to-Market Net Worth. Each GSE regularly estimates its pretax mark-to-market net worth and uses the estimates internally to manage interest rate risk and to make financing decisions. Freddie Mac was the first financial institution in the United States to publish estimates of its mark-to-market net worth and has done so since the third quarter of 1989. The GSE's outside accountants, Arthur Andersen and Company, audit its estimates and market value accounting procedures.

Freddie Mac's estimated mark-to-market net worth at the end of 1990 was $6.2 billion before taxes, up from $5.2 billion at the end of the fourth quarter of 1989. The largest component was the $4.2 billion estimated market value of the MBS guarantee fees that Freddie Mac expects to collect in the future. The remaining $2.0 billion represented the estimated market value of the mortgages and other assets in the GSE's portfolio, net of the market value of the debt issued to financed them. Loss reserves, real estate owned, physical plant, and a few other items were counted at their book value. Taking into account estimated income taxes on the difference between the enterprise's mark-to-market net worth and its GAAP net worth, its estimated mark-to-market net worth after taxes was $4.8 billion at the end of 1990.

Fannie Mae estimated that its pretax mark-to-market net worth at the end of 1990 was $6.1 billion. This amount consisted of the estimated market value of the mortgages in its portfolio, less the market value of the debt used to finance them, plus the book value of other entries on the balance sheet ($4.7 billion), plus the estimated market value of future guarantee fees from its outstanding MBSs ($1.3 billion). Conceptually, the net market value of the portfolio has two components: the market value of the hypothetical guarantee fees that Fannie Mae could collect for guaranteeing securities backed by the mortgages in the portfolio if the loans had been securitized ($0.3 billion), and the market value of the mortgages and other assets in the portfolio less the hypothetical fees and the market value of debt ($4.4 billion). To manage its assets and liabilities, Fannie Mae also separates the latter figure into two components: the mortgage investment portfolio (mortgages in the portfolio net of debt used to finance them, less hypothetical guarantee fees--$3.9 billion), and the liquid investment portfolio and all other assets and liabilities ($0.5 billion).

Fannie Mae and Freddie Mac take similar approaches to estimating their pretax mark-to-market net worth, but there are important differences in the technical assumptions that the GSEs make.[20] For example, the enterprises have different assessments of how fast mortgages will prepay at different interest rates, and of how future interest rates will vary from the long-term average. In addition, the estimates define the market value of exposure to credit risk quite differently. Freddie Mac defines this liability to be equal to GAAP loan loss reserves. Fannie Mae defines it as the present value of the annual premiums that the GSE would have to pay to a private mortgage insurer for assuming the credit risk on the mortgages in its portfolio and backing its MBSs (less estimates of the administrative costs and return on equity of the insurer). If Fannie Mae had used Freddie Mac's definition of the market value of credit risk, the former's estimated pretax mark-to-market net worth at year-end 1990 would have been $7.2 billion--about $1.1 billion higher. The differences in assumptions make it somewhat difficult to compare the estimates cited above, illustrate the sensitivity of such estimates to assumptions, and indicate some of the current limitations of mark-to-market analysis.

The Department of Housing and Urban Development or another federal supervisory agency could require Fannie Mae and Freddie Mac to use the same technical assumptions and comparable models to estimate their pretax mark-to-market net worth. The estimates would provide a measure of the economic net worth of the GSEs that could be disclosed to the public on a quarterly basis. As discussed in Chapter II, the government could also set a minimum capital requirement for Fannie Mae and Freddie Mac that required them to maintain a pretax mark-to-market net worth that was a specific percentage of the market value of their assets and MBSs.

Sensitivity of Pretax Mark-to-Market Net Worth to Instantaneous Changes in Interest Rates. Freddie Mac routinely assesses its exposure to interest rate risk by measuring the sensitivity of its pretax mark-to-market net worth to immediate changes in current interest rates. The analysis has two steps. First, current interest rates are assumed to increase or decrease instantaneously by one to five percentage points, thus providing 10 "shocks" to those rates. Second,

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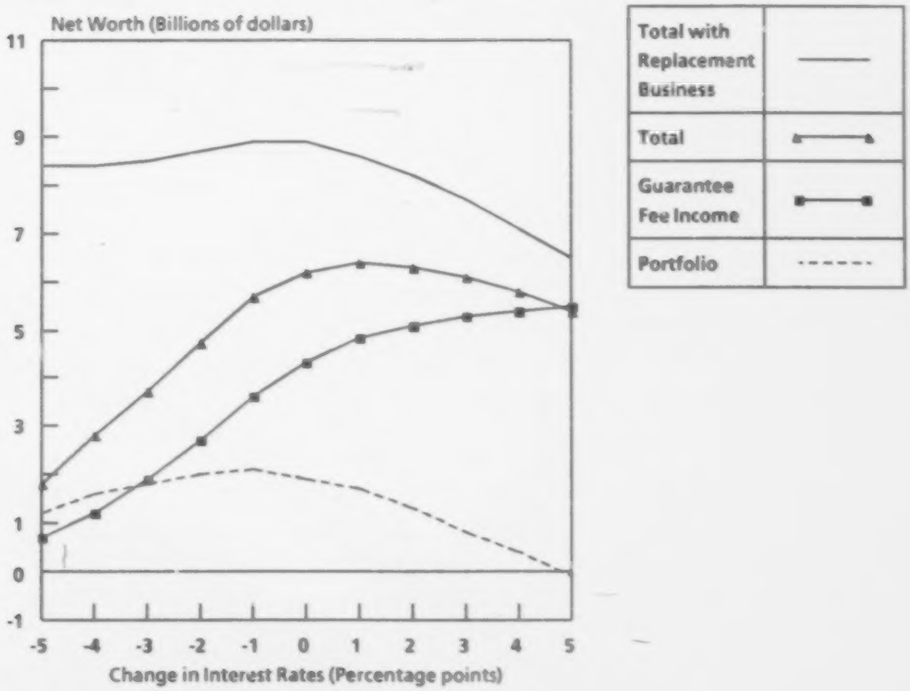
[20] For a general introduction to the estimation techniques used, see Andrew S. Carron and Marjorie Hogan, "The Option Valuation Approach to Mortgage Pricing," *Journal of Real Estate Finance and Economics*, vol. 1 (1988), pp. 131-149.

Freddie Mac's mark-to-market net worth is estimated under each new set of interest rates. The interest rates used to calculate the market values of the GSE's assets and liabilities are higher or lower by the amount of the assumed changes in interest rates.

The analysis shows that the estimated market value of Freddie Mac's MBS guarantee fees and the enterprise's mark-to-market net worth are more sensitive to sudden declines in current interest rates than to sudden increases (see Figure 8, which shows these estimates

Figure 8.
Sensitivity of Freddie Mac's Estimated Pretax Mark-to-Market Net Worth to Instantaneous Changes in Interest Rates



SOURCE: Congressional Budget Office using data from Freddie Mac.

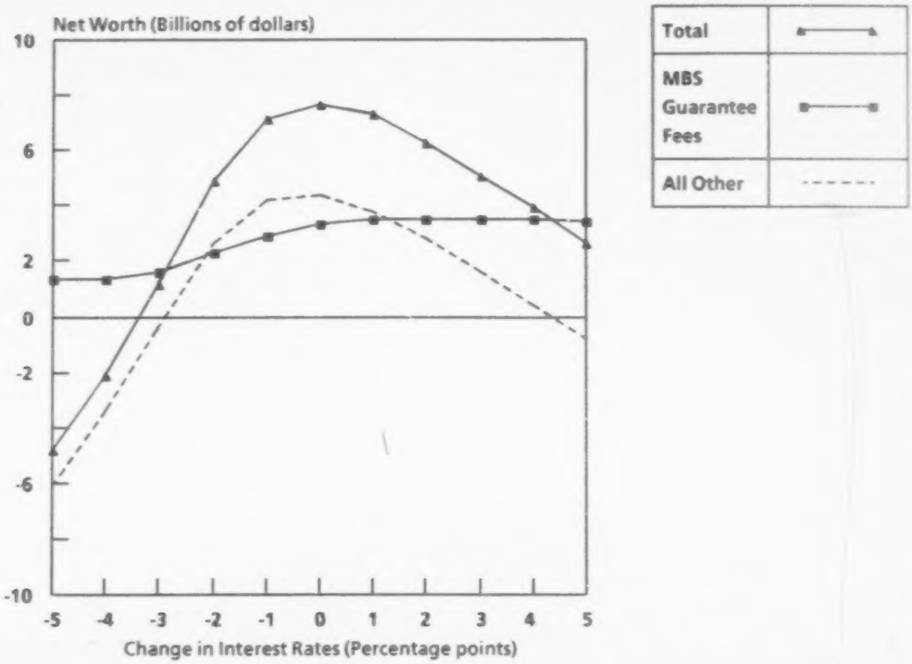
NOTE: Based on Freddie Mac's assets at year-end 1990.

for year-end 1990). This reflects the fact that mortgage prepayments accelerate more rapidly when interest rates decline than they decelerate when interest rates increase. The faster prepayments reduce the market value of future income from guarantee fees more than lower rates increase the present value of the cash flows. Even if increases or decreases of five percentage points in current interest rates are assumed, the estimated market value of the GSE's MBS guarantee fees and its estimated pretax mark-to-market net worth remain positive. According to Freddie Mac, the enterprise's estimated pretax mark-to-market net worth has been similarly insensitive to assumed instantaneous changes in interest rates since the third quarter of 1988, when the GSE began doing such analyses.

Freddie Mac also estimates its pretax mark-to-market net worth assuming that, as the mortgages it has financed are repaid, it will replace them on a one-for-one basis with new loans of the same type. The "replacement business" is assumed to earn a constant profit per dollar of assets in each future year, the return being equal to the enterprise's net revenue target for its MBS business. This assumption is equivalent to assuming that Freddie Mac will continue to benefit indefinitely from an implicit federal guarantee and to operate as it does today. As shown in Figure 8, the assumed replacement business increases the GSE's mark-to-market net worth under all assumed levels of current interest rates, but especially for the hypothetical declines in interest rates, under which prepaid mortgages are assumed to be replaced with new loans that earn a profit.

To assess each GSE's relative exposure to interest rate risk, CBO asked Fannie Mae to estimate how the immediate interest rate shocks of plus and minus one to five percentage points would affect its estimated pretax mark-to-market net worth as of the end of 1990. Figure 9 displays the results of the analysis. As with Freddie Mac, the estimated market value of Fannie Mae's income from guarantee fees remains positive under all the assumed interest rate shocks. For instantaneous declines of three percentage points or more, or increases of four percentage points or more, however, the estimated market values of the GSE's mortgage investment portfolio and other assets and liabilities become negative. For declines of four or five percentage points,

Figure 9.
Sensitivity of Fannie Mae's Estimated Pretax Mark-to-Market Net Worth to Instantaneous Changes in Interest Rates



SOURCE: Congressional Budget Office using data from Fannie Mae.

NOTES: Based on Fannie Mae assets at year-end 1990.

Guarantee fees for mortgage-backed securities (MBSs) include those for actual and hypothetical MBSs.

Fannie Mae's pretax mark-to-market net worth becomes negative.[21] The sensitivity of the market value of Fannie Mae's portfolio investments (minus associated liabilities) to large changes in interest rates mainly reflects the sensitivity of Fannie Mae's assets. The market value of its liabilities are less sensitive to changes in rates.

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[21] Even if Fannie Mae used the less conservative approach to estimating the liability from its exposure to credit risk employed by Freddie Mac, its mark-to-market net worth would still become negative if interest rates declined instantaneously by four or five percentage points.

Although the estimates in Figures 8 and 9 are not strictly comparable, they indicate that Fannie Mae is exposed to more interest rate risk than Freddie Mac. Fannie Mae's exposure is higher largely because it has financed 28 percent of its mortgages with mostly noncallable debt. In other words, in the current interest rate environment, Fannie Mae's portfolio is expected to earn significantly more money per dollar of assets than its MBS business, but if large changes in interest rates occurred instantaneously, the market value of the portfolio's earnings would decline much more.

Sensitivity of Holding-Period Returns. Fannie Mae does not use analyses of instantaneous changes in interest rates to assess its exposure to interest rate risk, since very large changes in interest rates are unlikely to occur overnight. Instead, the GSE assesses how a large number of hypothetical interest rate paths would affect the return on its mark-to-market net worth over a three-year holding period. The change in rates in each month of each scenario is consistent with the volatility of interest rates in recent decades. Fannie Mae analyzes the holding-period return on the market value of the two most important components of its pretax mark-to-market net worth: its mortgage investment portfolio and its actual and hypothetical MBS guarantee fee income. The annual after-tax, holding-period return on Fannie Mae's mortgage investment portfolio is defined as the change in the portfolio's market value plus the net interest income it earns during the period. The holding-period return of Fannie Mae's MBS business is equal to the change in the market value of MBS guarantee fees plus the GSE's fee income earned during the period.

Fannie Mae estimates that the annual after-tax return, over a three-year holding period, on the market value of its mortgage investment portfolio at year-end 1990 is likely to be much higher than the return on the market value of its actual and hypothetical MBS guarantee fees. However, for very large changes in interest rates over the period, the return on the GSE's mortgage investment portfolio is less than zero percent, indicating that the gain in market value from net interest income less income tax payments will be more than offset by the decline in market value caused by changes in interest rates. This would occur only under the most extreme scenarios, in which the 10-year Treasury rate was 4.9 percentage points higher, or 3.5 percentage points lower, than year-end 1990 rates at the end of three years. The annual holding-period return on the market value of Fannie Mae's MBS guarantee fees would be negative only at the end of scenarios in which the 10-year Treasury rate was 2.5 percentage points lower by the end of the period. The annual holding-period return on the two components combined would be negative only in the most extreme scenarios, in which rates rose by 4.9 percentage points or fell by 3.5 percentage points.

A major implication of this analysis is that the largest negative projected change in the market value of Fannie Mae's combined mortgage investment portfolio and MBSs under these interest rate scenarios is just under 27 percent.[22] This is the largest decline that the GSE estimates it could suffer if monthly changes in interest rates over the next three years are consistent with observed rate volatility in the last two decades, and if differences between long-term and short-term interest rates and rates on mortgages and other securities retain their current relationships. For Fannie Mae's pretax mark-to-market net worth to be negative at the end of the three-year holding period, the after-tax return for that period would have to be lower than negative 100 percent. Even so, the GSE still could suffer significant losses from rapid and extreme changes in interest rates. Fannie Mae employs interest rate stress tests to assess its exposure to this risk.

Interest Rate Stress Tests. Like Fannie Mae's analysis of holding-period returns, its interest rate stress tests take into account both the fact that large changes in interest rates are not likely to occur instantaneously, and the enterprise's ability to earn money as rates change. The first stress test used by Fannie Mae assumes that interest rates follow the pattern observed from January 1978 through December 1982. The second stress test assumes that all interest rates would increase by six percentage points in a year--0.5 percentage points a month for 12 months--and then remain at that level for four years. Both tests assume that Fannie Mae's mortgage purchases are high enough only to offset liquidations, resulting in no growth in its portfolio over the five-year period; that the overall maturity of outstanding debt, as well as the overall mix between short-term and long-term debt, remain constant; and that Fannie Mae's provisions for losses and charge-offs are the same as in its corporate business plan.[23]

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[22] Annual holding-period returns must be adjusted to obtain changes in pretax mark-to-market net worth over a holding period. For example, the highest annual holding-period return estimated by Fannie Mae is about 20 percent. This annual return equals a 72 percent increase in market value at the end of three years $[(1.0 + 0.2)^3 - 1.0]$. Similarly, Fannie Mae's lowest estimated annual holding-period return is about negative 10 percent. This equals a 27 percent decline in market value at the end of the three-year period $[(1.0 - 0.2)^3 - 1.0]$.

Fannie Mae has run the second stress test, which is more severe, beginning with the GSE's balance sheet and the interest rates that prevailed at the end of 1990. In the scenario, Fannie Mae's net interest income increases by 9 percent in 1991, falls to 4 percent below the 1990 level in 1992, and is above the 1990 level in each of the next three years. Its net income, while below the record $1.2 billion level of 1990 for most of the five-year period, is over $1 billion in every year.

Several factors contribute to this earnings stability. First, a significant amount of Fannie Mae's long-term debt is still outstanding at the end of 1995.[24] Second, its ARMs and nonmortgage investment portfolio offer protection in an environment of rising rates. Third, a slowdown in prepayments increases the proportion of lower-rate mortgages that are repaid. At year-end 1995, the enterprise's capital is more than double the year-end 1990 amount of $4.5 billion. Capital, as a percentage of assets and mortgage-backed securities, increases from 1.1 percent at year-end 1990 to more than 2.3 percent at year-end 1995.

Fannie Mae's performance in this test has improved since November 1989, when it was last run. At that time, net interest income increased nearly 18 percent in the first year of the scenario, but fell by 29 percent to 37 percent in subsequent years. The improvement reflects three factors. First, the GSE reduced its duration gap from six to three months during 1990. Second, the proportion of its long-term debt that is callable more than doubled during the period. The duration of callable debt lengthens as interest rates rise, matching some of the change in the duration of the fixed-rate mortgages in Fannie Mae's portfolio. Third, interest rates on Treasury securities with maturities of one to five years fell between November 1989 and December 1990.

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[23] The tests are described in more detail in Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises*, pp. A-53 to A-56.

[24] Because a large portion of Fannie Mae's long-term debt matures after 1995, it would be interesting to know how the GSE is projected to perform if the high level of rates in the stress test are assumed to continue indefinitely. If the government decided to base the interest rate component of a capital standard on this test, this information would help the government decide how long the enterprise should be required to remain solvent on a GAAP basis.

CAPITALIZATION

The overall risk of Fannie Mae and Freddie Mac is a function of each GSE's exposure to credit risk, interest rate risk, and other risks. The distribution of each enterprise's risk between owners and the government is a function of its capitalization. From the government's perspective, each GSE's capital consists of stockholders' equity--owners' investment in the firm--plus any liabilities on which payments can be interrupted before federal assistance is provided. Fannie Mae and Freddie Mac are adequately capitalized if the benefits they provide to the mortgage markets and to borrowers are worth the price of the risk they pose to the government and they have strong incentives to balance the costs and returns of new activities so as to avoid increasing the government's exposure to risk. The government can strike a balance between the risks and benefits of the enterprises by monitoring their capital and requiring them to meet federal capital requirements.

The stockholders' equity of both Fannie Mae and Freddie Mac, as measured under Generally Accepted Accounting Principles, is less than 1 percent of all their assets and MBSs. This ratio is a misleading indicator of the adequacy of their capital, however, because it fails to account for the income they will earn from their future MBS guarantee fees. To take this future income into account in assessing the adequacy of their capital and to set the capital standards that they impose on themselves, Fannie Mae and Freddie Mac conduct stress tests that simulate how large default losses and changes in interest rates would affect their performance and financial condition. The government can also use stress tests to assess the capital adequacy of the GSEs.

This section discusses the components of the capital of Fannie Mae and Freddie Mac and the statutory leverage ratio to which the GSEs are subject, and summarizes their internal capital standards. The section also summarizes the results of stress tests that the Office of Management and Budget (OMB) recently performed to assess each enterprise's capital adequacy.

Components and Trends of Capital

The stockholders' equity of Fannie Mae and Freddie Mac was $3.9 billion and $2.1 billion, respectively, at the end of 1990, as shown in Table 17. Retained earnings were the largest component, representing over 70 percent of Fannie Mae's equity and 88 percent of Freddie Mac's. Fannie Mae's equity was equal to about 0.9 percent of all assets

TABLE 17. CAPITAL (STOCKHOLDERS' EQUITY AND RESERVES) OF FANNIE MAE AND FREDDIE MAC, YEAR-END 1990

	Fannie Mae	Freddie Mac
In Millions of Dollars		
Stockholders' Equity		
Common stock	522	150
Additional paid-in capital	810	107
Retained earnings	2,772	1,879
Treasury stock at cost[a]	-163	0
Total	3,941	2,136
Reserves	539	627
Total Capital	4,480	2,763
As a Percentage of Assets and Mortgage-Backed Securities		
Stockholders' Equity	0.94	0.60
Total Capital	1.06	0.77

SOURCE: Congressional Budget Office using data from Fannie Mae and Freddie Mac.

a. Represents the cost of stock repurchased by Fannie Mae and used to manage capital and fund its obligations under its employee stock ownership plan and stock options programs.

retained and securitized by the GSE, while Freddie Mac's equity was equal to 0.6 percent of all assets.

The GSEs maintain reserves to absorb losses on mortgages they hold in portfolio and have financed with MBSs. Freddie Mac also has reserves for losses on sales of foreclosed properties. Fannie Mae had reserves of $0.5 billion, and Freddie Mac had reserves of $0.6 billion, at the end of 1990. Each GSE considers reserves to be a supplemental source of capital. The government could also decide to allow the GSEs to count their reserves as capital for the purpose of complying with a federal capital requirement. The ratio between total capital--stockholders' equity plus reserves--and assets and MBSs was equal to nearly 1.1 percent for Fannie Mae, and about 0.8 percent for Freddie Mac.

The ratio between each GSE's total capital and all the assets it has financed has varied over time. The losses suffered by Fannie Mae between 1981 and 1985 caused its ratio to fall from 1.9 percent to 0.76 percent during that period, as shown in Table 12. The rapid growth in the GSE's retained earnings since 1985 increased the ratio by more than a third by year-end 1990. Freddie Mac's ratio also declined between 1981 and 1986 as the mortgages it financed grew more rapidly than its retained earnings. This trend reversed in 1988, when Freddie Mac's earnings began to reflect the guarantee fee income generated by the MBSs issued in 1986 and 1987. The GSE's provisions for losses on its conventional multifamily program in 1989 and 1990 caused the ratio to remain flat in those years. However, if Freddie Mac's multifamily losses have been fully accounted for, as the GSE believes, the ratio should resume increasing in 1991. The reduction in Fannie Mae's interest rate risk in the 1980s, and the improvement in the credit quality of the mortgages that both GSEs have purchased since the major changes in underwriting standards in 1985, suggest that each enterprise's overall risk has fallen more in recent years than the trends in the capital-to-assets ratio alone would imply.

CBO expects that Fannie Mae and Freddie Mac will have the ability to increase significantly their capital as a percentage of assets and MBSs in the next five years. The GSEs would be able to increase their capital through growth in retained earnings and provisions for losses. CBO's expectation reflects baseline economic and operating assumptions, namely, that mortgage rates are fairly stable, each GSE retains its current market share, mortgage purchases grow at a reasonable pace, the enterprises make reasonable provisions for loan losses, and underwriting guidelines and management quality do not weaken. Under such assumptions, CBO projects that Freddie Mac could increase its total capital--equity and reserves--as a percentage of all assets by about 40 percent. A major source of this growth would be guarantee fee income on the large volume of MBSs issued by the GSE in 1986 and 1987. Under comparable assumptions, CBO expects that Fannie Mae could increase its total capital as a percentage of all assets by about 80 percent. Income from the enterprise's portfolio would be the major source of this growth, although MBS guarantee fees generated by the 1986-1987 business would also contribute. If the GSEs did not increase their exposure to risk, increases in capital of these magnitudes would reduce the risk they pose to the government.

The actual increases in capitalization achieved by Fannie Mae and Freddie Mac depend critically on their dividend policies and the performance of the economy. CBO's projections assume that they would not increase significantly the rates at which they currently pay dividends to stockholders. In the absence of binding federal capital requirements, the GSEs could raise these rates.

Two types of economic scenarios could disrupt the trends toward higher levels of capital. If the current recession was more severe or lasted longer than CBO expects, each GSE would have to absorb higher default losses. Also, if mortgage rates dropped below 9 percent for an extended period, borrowers would probably refinance a large portion of the mortgages financed by each enterprise. The resulting increase in the average remaining life of the loans would raise their credit risk, offsetting at least in part the reduction in each GSE's overall risk that higher capitalization could achieve.

Statutory Leverage Ratio

Under the charters of Fannie Mae and Freddie Mac, the ratio between each GSE's unsecured debt and regulatory capital may not exceed 15 to 1. Regulatory capital is defined by law to equal stockholders' equity, reserves, and subordinated debt (debt that has no claim on assets until payments on senior debt securities are made). The Secretary of HUD may increase this leverage ratio by regulation, and it is currently set at 20 to 1 for Fannie Mae. The ratio originated when Fannie Mae became a GSE in 1968, before the enterprise began to issue MBSs, and was applied to Freddie Mac by FIRREA in 1989. Because the restriction ignores each enterprise's MBSs, which account for most of their exposure to credit risk, it cannot be used to limit the government's exposure to risk.

Fannie Mae's Internal Capital Standard

As part of the internal management process of controlling the overall risk of Fannie Mae and Freddie Mac, each GSE has imposed a capital standard on itself. Fannie Mae's internal capital standard includes components for credit risk and interest rate risk. To minimize exposure to credit risk, the enterprise's objective is to be able to absorb the default losses that would occur if all the mortgages it financed performed like certain loans it purchased that were originated in Texas in 1981 and 1982. The GSE chose Texas loans made in those years because the state suffered a severe decline in economic activity, a large drop in property values, and a high incidence of mortgage defaults in the 1980s. With respect to the interest rate risk posed by Fannie Mae's portfolio, the objective is to hold capital equal to the greater of 2 percent of the mortgage assets in the portfolio, or the amount necessary to pass the GSE's stress test in which all interest rates are assumed to rise six percentage points in one year and remain at that level for four years. Appendix B explains Fannie Mae's internal capital standard in detail.

Fannie Mae announced its internal capital standard in 1990. The GSE's capital, defined as stockholders' equity plus reserves, was about $1.0 billion (22 percent) short of complying with the standard at the end of 1989, and about $0.7 billion (14 percent) short at the end of 1990, as shown in Table 18. At the end of the first quarter of 1991, the GSE's capital was 99 percent of the amount required by the standard.

TABLE 18. FANNIE MAE'S COMPLIANCE WITH ITS INTERNAL CAPITAL STANDARD, YEAR-END 1989 AND 1990
(In millions of dollars)

	1989	1990
Assets		
Mortgages in Portfolio[a]		
Nonrecourse	84,166	91,844
Recourse or FHA/VA	23,815	22,222
Mortgages Financed with MBSs		
Nonrecourse	111,062	181,003
Recourse or FHA/VA	105,450	107,072
Other Assets	16,559	19,242
Total	341,052	421,383
Capital Required by Standard[b]		
Credit Risk of Mortgages		
Nonrecourse (135:1)	624	680
Recourse (250:1)	95	89
Interest Rate Risk of Mortgages in Portfolio (50:1)	2,160	2,281
Credit Risk of MBSs		
Nonrecourse (135:1)	823	1,341
Recourse (250:1)	422	428
Credit Risk and Interest Rate Risk of Other Assets (50:1)	331	385
Total	4,454	5,204
Actual Capital		
Stockholders' Equity	2,991	3,941
Reserves	463	539
Total	3,454	4,480
Shortfall		
In Dollars	1,000	724
As a Percentage of Required Capital	22.5	13.9

SOURCE: Congressional Budget Office using data from Fannie Mae.

NOTE: FHA = Federal Housing Administration; VA = Department of Veterans Affairs.

a. Less mortgage-backed securities (MBSs) held in portfolio.

b. Leverage ratios--the allowed ratios between assets and capital--are shown in parentheses.

As an overall assessment of its capital adequacy, Fannie Mae recently analyzed how it would perform if it simultaneously experienced the mortgage default rates assumed in the credit risk component of its capital standard and the very high interest rates assumed in the stress test in which interest rates increase by six percentage points. This additive stress test is conservative, for two reasons. First, the probability of this combination of events occurring is very low, since the severe default rates assumed by the GSE are likely to occur in a deflationary period of low inflation and low interest rates. Second, Fannie Mae assumed that mortgages purchased during the five-year projection period would also experience very high default rates. In the combined stress test, net income is projected to fall dramatically, dropping to less than one-third of the 1990 level in 1993, and rising to only $0.5 billion in 1995. Nonetheless, the GSE's capital is projected to increase in dollar terms by more than 50 percent during the five-year period. At all times, Fannie Mae's capital is projected to be more than adequate to meet its internal capital standard.

Freddie Mac's Internal Capital Standard

Freddie Mac's internal capital standard is based on a stress test that analyzes how the GSE would perform during a severely deflationary period. The test assumes a stylized Great Depression scenario developed by Moody's Investors Service in the 1980s to assess the claims-paying ability of private mortgage insurers. The GSE's objective is to have enough capital, defined as stockholders' equity plus reserves, to remain solvent on a GAAP basis for the full 10 years of the scenario. Because declining interest rates hurt Freddie Mac more than rising rates--prepayments accelerate more in the former than they slow down in the latter--the Great Depression scenario represents both a credit and an interest rate stress test (see Appendix B).

Freddie Mac used the Great Depression stress test to analyze its capital adequacy at the end of 1987 through 1990. As shown in Table 19, at the end of 1987 and 1988 Freddie Mac was projected to survive a Great Depression scenario for more than five years and nine years, respectively. The improvement in 1988 reflected the aging and home price appreciation of loans purchased in the 1986-1987 period and the increase in the GSE's capital as a percentage of its assets in that year. Seasoning, home price appreciation, and improvements in the assumptions of Freddie Mac's model improved its score further, to more than 11 years, in 1989. Because home price appreciation averaged only 2 percent in 1990, at the end of that year the GSE was projected to survive for slightly more than 10 years. The figures indicate that Freddie Mac was in compliance with its internal capital standard at the end of 1989 and 1990.

As a supplementary test of its capital adequacy, Freddie Mac also simulates its performance during a severe credit crunch modeled after the 1979-1984 period of high interest rates and stagnant economic conditions. The stress test provides an assessment of the GSE's exposure to increases in interest rates. In the first four years of the 10-year scenario, short-term interest rates rise by 4 percentage points, and mortgage interest rates rise by 5.5 percentage points. Rates decline slowly over the remaining years of the scenario. Annual appreciation of home prices declines steadily throughout the period. Each time that Freddie Mac has run this test, its net income and total capital have been projected to increase in each year of the scenario, indicating that large increases in interest rates do not pose a risk to the GSE.

TABLE 19. PROJECTED YEARS FREDDIE MAC SURVIVES A SIMULATED GREAT DEPRESSION SCENARIO, YEAR-END 1987-1990

Year-end	Years of Book-Value Solvency[a]
1987	5
1988	9
1989	11.5
1990	10.3

SOURCE: Congressional Budget Office using data from Freddie Mac.

a. Freddie Mac used the same model to conduct the simulations in each year. However, the estimates for year-end 1989 and 1990 reflect improvements in the model's assumptions, which are described in Appendix B. Without the changes, the GSE's score would be about 11 years at year-end 1989 and about 9.9 years at year-end 1990. Scores of more than 10 years are approximations.

OMB's Assessment of the Capital Adequacy of Fannie Mae and Freddie Mac

The President's budget for fiscal year 1992 summarizes the results of stress test analyses of the capital adequacy of Fannie Mae and Freddie Mac performed by the Office of Management and Budget.[25] OMB's approach was similar to Freddie Mac's simulation of its ability to survive a stylized, 10-year Great Depression scenario. Appendix B discusses OMB's analysis in detail.

OMB found that both Fannie Mae and Freddie Mac would survive a simulated Great Depression that began in the year 2000. Freddie Mac was projected to lose money in the fourth through the ninth years of the downturn, and to return to profitability during the tenth year. Fannie Mae was projected to earn money throughout the simulated depression, but to experience a much higher level of default losses than Freddie Mac. The latter finding resulted from OMB's conservative assumption that Fannie Mae's future default losses would be consistent with the pattern of 1988 and 1989.

Based on these simulations, OMB concluded that the government's current financial exposure to the operations of Fannie Mae and Freddie Mac is close to zero under a Great Depression scenario. OMB qualified this conclusion, however, by stating that the government's exposure would remain minimal as long as the GSEs continue to operate as efficiently, profitably, and safely as they have in recent years, and stated that effective regulatory oversight is necessary to assure that they do so.

OMB's analysis is the first attempt by a federal agency to assess independently whether Fannie Mae and Freddie Mac have enough capital to survive a high level of default losses caused by a severe, nationwide economic downturn. CBO has concluded that the basic results of OMB's research--that both GSEs would survive for an extended period of time--are valid. Nonetheless, OMB's approach has some technical shortcomings. One defect is the assumption that Fannie Mae's future default loss rates will be significantly worse than Freddie Mac's. Another important shortcoming is that, under OMB's assumptions, each GSE's exposure to credit risk would be less when the depression began in the year 2000 than it is today. Further, the analysis ignores the credit risk posed by each GSE's multifamily loans. To use OMB's technique, HUD or another supervisor of Fannie Mae and Freddie Mac would want to simulate the GSEs' performance in a downturn assumed to begin immediately and to include multifamily loans.

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[25] Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1992*, Part Two-229.

HUD's SUPERVISION AND REGULATION OF FANNIE MAE AND FREDDIE MAC

The Department of Housing and Urban Development has general regulatory authority over Fannie Mae and Freddie Mac and certain limited powers over their financial management policies and their programs. HUD has regulated Fannie Mae since it became a GSE in 1968. The Financial Institutions Reform, Recovery, and Enforcement Act transferred regulation of Freddie Mac from the members of the Federal Home Loan Bank Board to HUD in 1989.

HUD's interpretation of its regulatory mission has changed significantly over time. For many years the department's sole objective apparently was to assure that Fannie Mae complied with HUD's view of the GSE's responsibilities under its charter. Since the passage of FIRREA, HUD has interpreted its role more broadly to include the responsibility of assuring that neither enterprise poses unreasonable risks to the government. Consistent with this mission, the department has begun to improve its ability to supervise the safety and soundness of Fannie Mae and Freddie Mac. However, there are questions about whether HUD has sufficient statutory authority and institutional capacity to be effective. This section explores these issues.[26]

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[26] The discussion draws on Department of Housing and Urban Development, *1986 Report to the Congress on the Federal National Mortgage Association* (June 27, 1987), pp. 156-169; and *1988-89 Report to the Congress on the Federal National Mortgage Association* (June 1990), pp. 46-51.

Statutory Mandate and Authority to Supervise Safety and Soundness

When Fannie Mae was chartered in 1968, the Congress wanted HUD to have some role in the financial management policies of the GSE. The department was given authority to increase the statutory limit on the ratio between the enterprise's senior debt (debt whose owners have first claim on assets) and its regulatory capital; to approve Fannie Mae issuances of stock, debt, and other instruments; to approve any stock purchase requirements that the GSE imposed on servicers; and to examine, audit, and require reports from the enterprise. HUD has these authorities over both GSEs today, except that its authority to approve issuances of securities is now restricted to sales of stock and debt that is convertible to stock. The department also may limit the total amount of cash dividends that Fannie Mae and Freddie Mac may pay per share of common stock in any fiscal year. The limit must be based on what HUD determines to be a fair rate of return, given the current earnings and capital condition of each GSE.[27]

The department also has general regulatory authority over Fannie Mae and Freddie Mac and may issue regulations to assure that the purposes of each GSE's charter are accomplished. The Congress has placed limits on HUD's exercise of this authority. The legislative history of each GSE's charter clearly states that HUD's regulatory powers shall not extend to either enterprise's internal affairs--such as personnel, salary, and other usual corporate matters--except where necessary to protect the financial interests of the government or to assure that the purposes of the charter acts are carried out.

There is significant disagreement about the limits of HUD's general regulatory authority. Fannie Mae does not believe that the department has authority to set capital standards that are more restrictive than the statutory leverage ratio or that apply to MBSs. The GSE also believes that HUD's authority to restrict dividends is not a general enforcement power. Freddie Mac contends that HUD could rely on its general regulatory authority to set more restrictive capital standards, issue capital directives or cease and desist orders, or disapprove risky activities, at least if it had promulgated appropriate regulations concerning the use of such powers to assure the safe and sound operation of the GSEs. HUD's current view appears to be close to that of Freddie Mac. Because of this disagreement, it might be prudent to clarify HUD's statutory mandate and authority in legislation.

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[27] In addition, the President has the ability to remove Fannie Mae's directors for good cause, which could be interpreted as extending to directors' approval of excessively risky activities.

Before the enactment of FIRREA, HUD narrowly interpreted its statutory mandate and authority. The department made no attempts to assure the financial health of Fannie Mae. The primary objective of HUD's regulation was to assure that the GSE achieved its public purposes, particularly with respect to financing low- and moderate-income housing. In the 1980s, responsibility for overseeing the enterprise was shifted among several offices in HUD. In none of these was an experienced staff developed to monitor the risk posed by the GSE's activities. The department has not used its authority to examine Fannie Mae.

In 1990, HUD began to interpret its role more broadly to include the responsibility of assuring that both Fannie Mae and Freddie Mac do not pose unreasonable risks to the government. The department took several steps. The Secretary created a Financial Institutions Regulatory Board (FIRB) to assist him in exercising his regulatory authority over the two GSEs and to carry out his responsibilities as a member of the Oversight Board of the Resolution Trust Corporation (RTC) and of the Federal Housing Finance Board, which regulates the Federal Home Loan Bank System. The new FIRB comprises the Undersecretary of HUD, the General Counsel, the Assistant Secretary for Housing, the Assistant Secretary for Policy Development and Research, the Assistant Secretary for Community Planning and Development, and the President of Ginnie Mae. The board formulates regulatory options and makes recommendations to the Secretary on actions and decisions.

HUD also allocated five full-time professional staff positions--four for economists and one for an examiner--to provide analytical and policy support to the new FIRB. The staff will report to the Assistant Secretary for Policy Development and Research and receive support from HUD's Office of General Counsel and other offices in the department. In the first six months of its existence, the staff has focused on improving HUD's ability to monitor the risk exposure of Fannie Mae and Freddie Mac. It also has begun to collect extensive data on their assets and liabilities and on the historical performance of the mortgages they have financed. Building on an existing HUD model that simulates Fannie Mae's cash flows, which has been used to assess the GSE's exposure to interest rate risk, the staff intends to develop additional stress tests to assess the exposure of both enterprises to credit risk and interest rate risk.

In July 1990, HUD held hearings on possible changes in its regulations concerning Fannie Mae, and on the issuance of regulations concerning Freddie Mac. The department has recently drafted new regulations that would apply to both GSEs.

Institutional Capacity to Supervise Fannie Mae and Freddie Mac

Despite the creation of the new FIRB and a new regulatory staff, HUD's institutional capacity to supervise the safety and soundness of Fannie Mae and Freddie Mac remains limited, especially when compared with that of the other GSE regulators. The department does not have the ability to assess the enterprises for the cost of maintaining a regulatory staff, but must rely on annual appropriations. HUD also is subject to the civil service salary structure, which means that it cannot hire experienced bank or thrift examiners to develop an in-house capacity to examine Fannie Mae and Freddie Mac. Instead, the regulatory staff is planning to use outside consultants to design and conduct the first federal examinations of the GSEs. Finally, it seems very unlikely that the department has allocated sufficient positions to be able to monitor the enterprises effectively. By way of comparison, the Office of the Comptroller of the Currency (OCC) continuously maintains an examination staff at each of the money-center banks. OCC staff also conduct off-site monitoring.

Role as a Program Regulator

HUD has two types of programmatic authority over Fannie Mae and Freddie Mac. The department has authority to approve new conventional mortgage purchase programs, and to require the GSEs to purchase a reasonable amount of mortgages for low- and moderate-income housing.

The department must approve proposals by either GSE to purchase conventional mortgages, home improvement loans, and mortgages for manufactured homes, if the purchases would constitute new programs or activities. In 1984, the Congress required HUD to approve a Fannie Mae request for a new mortgage purchase program within 45 days or report to the Congress explaining why the request has not been granted. If HUD needs additional information from Fannie Mae, this period may be extended by 15 days. Under FIRREA, the same deadlines apply to Freddie Mac's requests for program approvals.

The implicit federal guarantee of obligations issued by the two enterprises, their economies of scale, and their lower costs of issuing securities enable them to dominate markets that they are permitted to enter. HUD believes that its statutory responsibility to assure that the purposes of the charter acts are carried out requires it, when reviewing requests for approval of new programs and activities proposed by the GSEs, to consider the significant market power of Fannie Mae and Freddie Mac and the actual or potential ability of other financial institutions to provide the same services. In the 1980s, the department's review of Fannie Mae's requests for approval often focused on how the GSE's advantages might affect competition between the enterprise and wholly private firms. HUD also believes it has a responsibility to evaluate how proposed new programs and activities would affect consumers.

In FIRREA, the Congress amended the purposes specified in the charter act of each GSE, directing them to provide stability in and ongoing assistance to the secondary mortgage market, and to respond appropriately to the private capital markets. A previous mandate that the enterprises provide supplementary assistance to the secondary market was deleted. The legislative history of FIRREA also suggests that HUD may disapprove a Freddie Mac request for approval of a new program only if the proposed activity would not enable the GSE to achieve its purposes. Fannie Mae and Freddie Mac interpret these changes as preventing the department from disapproving new programs or activities proposed by either of them on grounds related to competition between the GSEs and wholly private financial institutions. HUD argues that, to assess whether proposed programs or activities would provide stability to the secondary market or respond appropriately to the capital markets, the department must evaluate the effect of proposed initiatives on the competitive structure of the housing finance system.

The department also has the authority to require that a reasonable portion of each GSE's mortgage purchases be devoted to the national goal of providing adequate housing for low- and moderate-income families, so long as the enterprises earn reasonable returns. In the late 1970s, the department attempted to use this authority to force Fannie Mae to devote specific percentages of its purchases to housing for these families and in central cities. The current regulations embody a compromise struck by HUD and the GSE in 1978 that encourages Fannie Mae to devote 30 percent of its purchases of conventional mortgages to low- and moderate-income housing, and 30 percent to housing in central cities. If these goals are not met, the Secretary may set annual goals for purchases of such mortgages or require the GSE to propose a plan to buy more of them. The regulations do not allow HUD to require that Fannie Mae purchase specific amounts of such mortgages.

HUD's pursuit of programmatic objectives related to low- and moderate-income housing in the late 1970s conflicted with efforts to reduce Fannie Mae's exposure to interest rate risk. In fact, the department disapproved a proposed program that would have enabled the enterprise to reduce the risk of its activities (see Box 8). Three factors contributed to this action: HUD's program authority, the fact that the department had no clear statutory mandate and arguably limited statutory authority to assure the safe and sound operation of Fannie Mae, and the policy goals of the Administration in office.

Because the first two factors still exist today, HUD could again seek to have Fannie Mae and Freddie Mac devote resources to low- and moderate-income housing at the expense of safety and soundness. This danger probably is not very great, however, for two reasons. First, in 1984, the Congress repealed the requirement that HUD approve all

BOX 8

The Conflict Between HUD's Pursuit of Programmatic Objectives and Efforts to Reduce Fannie Mae's Risk Exposure in the Late 1970s

The Department of Housing and Urban Development (HUD) has programmatic authority over Fannie Mae and Freddie Mac, but no clear statutory mandate and arguably limited statutory authority to assure the safety and soundness of the GSEs. The department's actions in the late 1970s illustrate how this combination can lead a regulator not to attempt to reduce an enterprise's risk, and even to frustrate the GSE's attempts to do so.

In 1978, HUD proposed regulations that would have required Fannie Mae to allocate fixed percentages of its mortgage purchases to housing for low- and moderate-income families and in central cities. The GSE and others disputed the department's legal authority to issue the regulations, which generated controversy and consumed considerable time and energy at the department and Fannie Mae and in the Congress. Ultimately, HUD accepted a compromise under which Fannie Mae would be encouraged to devote 30 percent of its purchases to mortgages in each category.

At the same time, Fannie Mae's practice of financing long-term mortgages with short-term borrowings exposed it to considerable and growing interest rate risk. HUD was aware of Fannie Mae's increasing exposure. In 1976, the department's general counsel, a publicly appointed member of the GSE's board of directors, raised the issue with the board. However, HUD did not demand that Fannie Mae adopt a less risky financing strategy.

In fact, HUD prevented Fannie Mae from doing so. In February 1979, the department refused to approve a mortgage participation program proposed by the GSE more than one year before. Under the program, Fannie Mae would have sold participations in a percentage of the payments received on pools of mortgages it had purchased. The participations would have passed on to investors most of the prepayment risk on the pools of loans, just as Fannie Mae and Freddie Mac's MBSs do today. The program would have enabled Fannie Mae to reduce the growth in its debt and, thereby, its exposure to interest rate risk. As grounds for disapproving the program, HUD cited its objective of increasing the volume of Fannie Mae programs designed to stimulate the flow of mortgage funds into older urban areas.

SOURCES: Congressional Budget Office based on Robert R. Elliot, "Memorandum For: FNMA Board of Directors; the Corporation's Ten Percent Annual Target for Asset Growth," April 23, 1976, in *Secondary Market Operations of the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation*, Hearings before the Senate Committee on Banking, Housing, and Urban Affairs (December 9, 1976), pp. 395-411; and Hilbert Fefferman, "The Process by Which HUD Reviews Proposed FNMA Program Changes and Additions" (memorandum prepared for Fannie Mae, March 4, 1980), pp. 28-33.

issuances of Fannie Mae debt, a power that the department had used to achieve leverage over the GSE in the 1970s. Second, the requirement that the enterprises earn a reasonable economic return on purchases of such mortgages should prevent HUD from requiring them to invest in loans that do not meet their underwriting guidelines or that carry below-market interest rates. Under current law, if HUD increased its recommended purchases of low- and moderate-income loans to levels that the enterprises could not achieve without earning below-market returns, they could just refuse to comply, arguing that such a directive exceeded the department's authority. At that point, HUD would have to demonstrate in court that its directive was consistent with the charter acts.

OPTIONS FOR CHANGE IN THE CURRENT REGULATORY STRUCTURE

The Department of Housing and Urban Development's ability to assure the safety and soundness of Fannie Mae and Freddie Mac could be enhanced in several ways. These measures include strengthening the department's institutional capacity, broadening its statutory mandate and statutory authority, requiring the department to streamline supervision of Fannie Mae and Freddie Mac if it determined that their overall risk was low, and establishing a new supervisory agency within HUD. An altogether different approach would be to move supervision of the safety and soundness of the GSEs out of the department. This section examines these options.

Strengthen HUD's Institutional Capacity

The department's institutional capacity could be enhanced by allowing it to determine the budget, staffing levels, and salary structure of the new regulatory staff for financial institutions, and to assess the GSEs for the cost of the staff's activities and of any time that other HUD staff spend on regulatory issues. These changes would enable HUD to determine the size and compensation of the regulatory staff and to compete successfully with the bank regulatory agencies, the enterprises, and other large financial institutions when seeking competent and professional personnel. The department would be able to train and retain a highly qualified group of examiners to conduct regular examinations of the enterprises.

The cost to Fannie Mae and Freddie Mac of these changes would probably be low--perhaps several million dollars a year. A significant portion of this expense would be for computer services. The enterprises also could bear some internal costs arising from increased interactions with HUD. They probably would not object to bearing costs of this order of magnitude, particularly if HUD used the funds to assemble a competent and professional staff. However, to assure that the assessments paid by Fannie Mae and Freddie Mac did not subsidize HUD's other activities, the regulatory staff would have to develop a reasonable cost accounting system to keep track of how much time staff in other parts of HUD, such as the Office of General Counsel, spent on regulating the GSEs.

A more limited option would be to allow HUD to assess Fannie Mae and Freddie Mac for the cost of examinations but not of other regulatory activities, such as off-site monitoring, computer-based financial modeling, or legal work. The department would pay for those expenses out of appropriated funds, which the GSEs would not reimburse. Relying on appropriated funds could prevent HUD from effectively supervising the GSEs, but it would be more difficult for the department to assess the GSEs for the costs of activities that were unrelated to them.

Strengthen HUD's Statutory Mandate and Authority to Supervise Safety and Soundness

The department's ability to assure the safety and soundness of Fannie Mae and Freddie Mac could be enhanced by strengthening its statutory mandate, explicitly requiring it to use its general regulatory authority to assure the safe and sound operation of the two GSEs, and supplementing that authority. A clear statutory mandate would make HUD more likely to respond to signs of financial weakness at either enterprise by taking action to protect the government's interests and to assure that the GSE remained financially viable and capable of achieving its public purposes. The department's general regulatory authority could be augmented by requiring HUD to set risk-based capital requirements for the GSEs that were binding, giving it authority to limit excessive risk taking, and empowering it to act if either enterprise were in serious financial trouble.

Require HUD to Set Risk-Based Capital Requirements. The Congress could require HUD to set binding, risk-based capital standards for Fannie Mae and Freddie Mac based on an assessment of each enterprise's overall risk. The department's evaluations would reflect exposure to credit risk, interest rate risk, and other risks, as well as the probability, given historical experience, of the occurrence of economic conditions severe enough to endanger the financial health of the GSEs. The requirement would cover all assets financed by each enterprise and require specific amounts of capital. Capital could be measured on a mark-to-market or a GAAP basis.

Giving HUD explicit authority to set capital requirements would pose a risk of regulatory failure, in two senses. First, the department could set capital standards that were excessive. The Congress could minimize this risk by limiting HUD's discretion, as discussed in the next section. Second, the department could allow the GSEs to maintain capital levels that were low relative to their risks. To minimize this, the Congress could set a statutory minimum capital standard for the GSEs. Alternatively, the enterprises could be required to obtain private assessments of their risk from private credit-rating agencies, to issue subordinated debt, or to disclose data that would enable independent observers to replicate the results of stress tests or other quantitative assessments of risk. Both of these approaches are discussed in Chapter II.

Establish Procedures to Assure Compliance with Limits on Risk. To fulfill a mandate to assure the safety and soundness of Fannie Mae and Freddie Mac, HUD would have to be able to limit the risk of their activities. One approach would be to allow the department to intervene in either GSE's operations only if the enterprise had failed to comply with its federal capital requirement. For example, HUD and Fannie Mae or Freddie Mac could be required to follow specific statutory procedures if the enterprise was not in compliance with the capital standard. A GSE whose capital fell short of the standard for a specified period of time would have to submit a recapitalization plan to the department. HUD would have to approve or disapprove the plan within a reasonable period of time. As a condition of approval, the department could require that the plan include limits on the GSE's dividend payments, stock repurchases, mortgage purchases, or MBS issuances. If the enterprise failed to comply with a plan to increase its capital approved by HUD, or the GSE and the department could not agree, HUD would have to go to the Congress for legislation to correct the problem.

This approach would have the advantage of assuring Fannie Mae and Freddie Mac that HUD would not intervene in their operations as long as they complied with federal capital requirements and their programs were authorized by their charters, especially if this procedure was accompanied by a repeal of the department's authority to approve each new program to purchase conventional mortgages proposed by the GSEs. The procedure would also allow either GSE, if it was out of compliance with its capital standard, to go to the Congress if it had proposed one or more business plans that had not met with the department's approval.

The approach would have two important disadvantages. First, if either GSE and HUD could not agree upon an acceptable recapitalization plan, the delay required to enact legislation to address the issue could result in losses for the government. Second, HUD could not take action if examinations or monitoring revealed that the risk of Fannie Mae or Freddie Mac had increased to the point that its safety and soundness was threatened, but the GSE was still in compliance with federal capital requirements. Because GAAP capital tends to be a lagging indicator of problems at financial institutions, requiring the department to wait could allow hidden losses to mount and make it more difficult to implement a recapitalization plan later on. Actions that could pose this danger include moves toward very risky financing strategies, and purchases of mortgages of lower credit quality. Other events could include the development of management deficiencies, very large changes in interest rates over short periods, or major failures in operating procedures and controls.

In effect, under this approach, the government would rely heavily on the market discipline of stockholders to prevent a GSE from increasing its risk. Doing so could be unwise, since stockholders probably would have less information than HUD's examiners, and might prefer greater risk if they thought an enterprise could earn higher returns. However, because the portfolios of Fannie Mae and Freddie Mac consist of residential mortgages, are extremely large, and are well diversified geographically, the risk that unrecognized losses could become large before either GSE failed to comply with its capital requirement could be lower than for other financial institutions.

Another approach would be to give HUD explicit enforcement powers and to direct the department to use them to assure that Fannie Mae and Freddie Mac complied with federal capital requirements and operated in a safe and sound manner. As discussed in Chapter II, the most important enforcement powers would be the ability to issue capital directives and cease and desist orders, including temporary orders, and the authority to remove directors of a GSE that failed to comply with them. This approach would have the advantage of enabling HUD to address GSE activities that it deemed to be unsafe and unsound, whether or not the activities had caused a failure to comply with capital requirements. A potential disadvantage is that the department might use such powers to intervene unnecessarily in the business decisions of Fannie Mae and Freddie Mac, perhaps to achieve programmatic objectives. The Congress could address this concern by requiring HUD to define in advance at least some of the practices that it would consider to be unsafe and unsound, and by using the legislative history to require the department to exercise enforcement powers solely to address concerns about the government's exposure to risk (see Chapter II).

Establish Procedures for Dealing with Insolvency. Although Fannie Mae and Freddie Mac appear unlikely to become insolvent, the Congress might want to put in place procedures that HUD could follow if either GSE ever became insolvent or was close to insolvency. One approach, discussed in Chapter II, would be to allow HUD to appoint a conservator. In order to maximize support for the mortgage markets, the department could be required to direct a conservator to allow the enterprise to continue to securitize mortgages if the expected default losses and exposure to credit risk could be reasonably estimated. HUD could also be required to submit legislation addressing the situation within a limited period of time after it appointed a conservator. Another option would be to rely solely on the department's general regulatory authority and the legislative process to deal with an insolvent Fannie Mae or Freddie Mac.

The advantage of giving HUD conservatorship power is that swift action might prevent an insolvent Fannie Mae or Freddie Mac from increasing the risk of its activities in an effort to gamble its way back to solvency. Gambling by insolvent thrift institutions in the 1980s increased the cost of the thrift bailout severalfold. Even if a nationwide depression had occurred and the government was willing to provide financial assistance to revitalize the GSE, taking such action might be prudent to protect the government from having to absorb additional losses. Moreover, if a GSE was insolvent or close to insolvency because of serious management errors, conservatorship would probably not do significant additional damage to the franchise value of the enterprise.[28]

Allow HUD to Streamline the Supervisory Process

Chapter II outlined how the government could streamline the supervision of low-risk GSEs. Several factors suggest that this might be appropriate for Fannie Mae and Freddie Mac. The GSEs are fairly well capitalized relative to their exposure to credit risk and interest rate risk. The stability of their earnings in recent years suggests that the quality of their management and their operating systems are generally good. The low-risk nature of residential mortgages and the benefits of geographic diversification imply that sophisticated, but relatively nonintrusive, monitoring and examinations would soon reveal major changes in risk or financial condition. Accordingly, the Congress might want to require HUD to streamline the regulatory reporting and disclosures by, and federal examinations of, Fannie Mae and Freddie Mac if the department concluded that their overall risk was low and they were well capitalized. The same requirement could be imposed on any other agency with responsibility for supervising the two GSEs. A streamlined supervisory process would minimize the costs that closer federal supervision would impose on Fannie Mae and Freddie Mac. It also could help to foster a positive atmosphere in the early years of a new, relatively nonintrusive regulatory relationship between HUD, or another supervisory agency, and the GSEs.

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[28] The recent experience of Congressional action with respect to the ailing Farm Credit System (FCS) may be instructive. The Congress passed bills addressing the system's financial difficulties in 1985 and 1986. When a third bill providing up to $4 billion in federal financial assistance was passed in 1987, it included provisions giving the FCS's regulator, the Farm Credit Administration, authority to appoint a conservator or receiver for failing FCS institutions.

It would appear prudent to allow the supervisory agency to determine whether the overall risk of Fannie Mae or Freddie Mac was low enough to justify a minimal level of monitoring and scrutiny, rather than to require it in law. If either GSE increased the risk of its activities or suffered losses that brought it out of compliance with federal capital requirements, the agency would be able to institute more extensive examinations and more intensive monitoring. To assure that the enterprises could become eligible for streamlined supervision, the Congress could direct HUD or any other regulator to develop a measure of the overall risk of Fannie Mae and Freddie Mac, and require it to institute minimal monitoring and scrutiny if a GSE received a low-risk rating.

Establish an Independent Supervisory Agency Within HUD

The changes in the department's institutional capacity, statutory mandate, and statutory authority outlined above could be supplemented by the creation of a new agency within HUD to supervise the safety and soundness of Fannie Mae and Freddie Mac. The new HUD agency would be directed by an official appointed by the President and confirmed by the Senate. The relationship between the Secretary and the director of the agency would be modeled after the relationship between the Secretary of the Treasury and the Comptroller of the Currency. The agency would perform its functions under the general direction of the Secretary, but would retain ultimate statutory responsibility for assuring the safe and sound operation of the GSEs. The Secretary would retain the current authority to approve new mortgage purchase programs, although of necessity the new agency could specify how federal capital requirements would apply to new programs. The Secretary also would retain the ability to require the enterprises to devote a reasonable portion of their mortgage purchases to low- and moderate-income housing, provided they earned reasonable returns.

By making a single agency and its Presidentially appointed director responsible solely for supervising the safety and soundness of Fannie Mae and Freddie Mac and accountable for any losses they imposed on the government, this option could increase the likelihood that appropriate action would be taken to protect the government if either GSE engaged in excessively risky activities. However, the director of the new agency probably would be a less prominent federal official than the Secretary of HUD, and the latter, therefore, might have leverage over the agency's decisions. The Secretary might be able to use this leverage to influence the agency's decisions about capital requirements and other safety and soundness concerns.

Move Supervision of Fannie Mae and Freddie Mac to a New Supervisor of All GSEs

One strategy for reforming federal regulation of GSEs would be to centralize supervision of the safety and soundness of all the enterprises. One approach would create a new federal agency and give it responsibility for supervising all the enterprises (see Chapter II). Creation of a centralized supervisor of all GSEs might lessen the risk that Fannie Mae and Freddie Mac would dominate the decisions of, or capture, their regulator. Regulatory capture could take the form of influencing HUD to set capital requirements that were low relative to the risks of the enterprises. Because a centralized supervisor would be responsible for the safety and soundness of all the GSEs, it might be less susceptible to such influence.

A single agency might also be better able to develop comparable capital standards for Fannie Mae, Freddie Mac, and the Federal Home Loan Bank System. Comparability could assure that each provided an equal implicit federal subsidy to the mortgage lenders it served and would be a step toward making thrifts that borrow from the FHLBs able to compete with Fannie Mae and Freddie Mac in the conforming loan market. A more level playing field in the mortgage finance system could also help to minimize the risk that Fannie Mae and Freddie Mac might use their dominant position in the market for conforming fixed-rate mortgages to obtain some of the implicit federal subsidy that mortgage borrowers now receive. The GSEs could do so by raising their MBS guarantee fees or lowering the prices that they pay for mortgage loans. (Chapter V discusses the effects of the differences in the capitalization of the three GSEs in detail.)

As discussed in Chapter II, the Secretary of HUD would be able to articulate the objectives of the department's housing policy as a nonvoting member of the board of the new agency. Program regulation of Fannie Mae and Freddie Mac could be retained by HUD, or transferred to the new supervisory agency. As noted above, under current law HUD cannot require Fannie Mae and Freddie Mac to provide subsidized financing for mortgages for low- and moderate-income housing. It seems unlikely, therefore, that transferring this authority to a new supervisory agency would have a significant impact on the allocation of resources. Such a move could affect the housing sector, however, if the agency required Fannie Mae and Freddie Mac to maintain significantly more capital than they do now. The potential economic consequences of higher capital requirements are discussed in the final section of this chapter.

A case can be made that HUD, as the most important government agency responsible for federal housing policy, should continue to be able to assure that Fannie Mae and Freddie Mac achieve their charter acts' objectives of supporting the housing finance system. The department could use its expertise in housing finance and housing policy issues in monitoring the GSEs' low- and moderate-income mortgage purchases and reviewing requests for program approval. A related concern is that, if HUD retained its current programmatic authority but another agency supervised the safety and soundness of the GSEs, or if the Secretary was a nonvoting member of the board of a new centralized supervisory agency but the department had no statutory responsibilities, Fannie Mae and Freddie Mac might be less willing to address housing policy concerns raised by HUD.

Transfer Supervision of the GSEs to the Federal Housing Finance Board

Another option would transfer supervision of Fannie Mae and Freddie Mac to the Federal Housing Finance Board, which supervises the Federal Home Loan Bank System. The board might be able to develop more extensive expertise in housing finance than a centralized supervisor of all GSEs. However, the FHFB could not take the same approach to supervising the three GSEs, for several reasons.

The ownership, activities, and tax status of Fannie Mae and Freddie Mac differ significantly from those of the FHLB system. Fannie Mae and Freddie Mac have issued publicly traded stock. Consistent with their responsibility to shareholders, the government does not require the two GSEs to engage in any subsidized activities, and subjects them to federal income taxation. In contrast, the FHLBs are owned by the thrifts and other financial institutions that they serve. These owners have a limited ability to influence the activities of the banks, which are largely controlled by the FHFB. The FHFB also has very broad statutory authority and is not an arm's-length supervisory agency (see Chapter V). One of the reasons that the FHLB system continues to exist is to provide subsidies for affordable housing. The banks do not pay federal income taxes.

These differences suggest that the Congress would have to distinguish carefully between the FHFB's statutory authority over Fannie Mae and Freddie Mac and its current authority over the FHLB system. This would require addressing many of the issues about statutory authority discussed above. The board also would need time to develop expertise in a range of issues concerning the risks to which Fannie Mae and Freddie Mac are exposed and how the GSEs control those risks, including underwriting guidelines for mortgage loans and MBS activities, and to promulgate regulations for the two enterprises that differed considerably from those that now apply to the FHLB system. This effort probably would require a restructuring and a significant increase in the size of the agency.

ISSUES IN SETTING FEDERAL RISK-BASED CAPITAL REQUIREMENTS FOR FANNIE MAE AND FREDDIE MAC

Establishing new federal capital requirements for Fannie Mae and Freddie Mac involves many policy judgments. Chapter II examined three topics that are relevant to several GSEs--whether to establish a statutory minimum capital standard, how to incorporate management and operations risks into a risk-based standard, and whether and how to establish comparable risk-based requirements for the three housing GSEs. This section discusses issues raised by the option of giving HUD, or another GSE regulator, the authority to impose a binding, risk-based standard on Fannie Mae and Freddie Mac. The issues include the treatment of interest rate risk in a capital requirement, providing direction to the agency charged with setting a risk-based standard, and the possible economic effects of requiring the two enterprises to increase their capital.

Including an Interest Rate Risk Component in a Risk-Based Capital Standard

A risk-based federal capital requirement for Fannie Mae and Freddie Mac should take into account each GSE's exposure to interest rate risk. A standard could do so by making the amount of capital that each enterprise was required to maintain depend on the amount of interest rate risk it chose to take.

The decision about how much capital Fannie Mae and Freddie Mac should have to protect against interest rate risk arguably involves a basic policy judgment about their public purposes. Some analysts assert that the GSEs can adequately support the mortgage market and link mortgage lenders to the capital markets by financing conforming mortgages with MBSs. This role would require them to maintain small portfolios for the sole purpose of assembling pools of mortgages to be securitized, as Freddie Mac does. The principal beneficiaries of Fannie Mae's large portfolio, these analysts contend, are not mortgage lenders or borrowers, but the enterprise's stockholders, who receive greater implicit federal subsidies than the owners of Freddie Mac. This view implies that the government should require Fannie Mae to reduce the size of its portfolio to about 5 percent to 10 percent of the assets it has financed.

An alternative perspective is that, although Fannie Mae's portfolio exposes the GSE to greater interest rate risk, it also provides the benefits discussed below. In this view, the government should determine the appropriate trade-off between the cost of Fannie Mae's greater exposure to interest rate risk and these benefits by including an interest rate risk component in a federal capital standard for the two GSEs.

Interest rate stress tests would provide the simplest and most easily understood way to set the interest rate component of a capital requirement for Fannie Mae and Freddie Mac. One reasonable rule for selecting a stress test is that it has to assume a plausible worst-case scenario for the enterprises, that is, a pattern of interest rates that is as adverse as any judged to be within the realm of possibility. If a credit stress test is also used in setting a capital standard, another way of stating this rule is that the scenarios must be equally improbable. Otherwise, Fannie Mae and Freddie Mac would be more vulnerable to a worst-case change in interest rates than a worst-case decline in employment and residential real estate values. A number of scenarios would probably satisfy this rule. Whatever scenarios are chosen, it would be useful to know how each GSE performed over a long period, so that the government would have the maximum amount of information when deciding how long it would require them to survive.

Requiring Fannie Mae to Hold More Capital Against Interest Rate Risk. If a capital standard required Fannie Mae to hold more capital against its exposure to interest rate risk than its internal capital standard requires, the risk that the GSE posed to the government would decline. At the same time, there would be fewer situations in which the enterprise believed that it would be profitable to finance mortgages with debt, and its portfolio would grow more slowly or shrink in size.

A reduction in Fannie Mae's portfolio operations could have three consequences. First, investors would expect a lower return on their equity in the GSE. The riskiness of that return might also decline, since the GSE's capitalization would be higher, and its net income might be less likely to vary with changes in interest rates. How the change affected the market price of Fannie Mae stock would depend on how these two effects were valued by investors.

Second, Fannie Mae's ability to provide several types of services to the secondary mortgage market could be diminished. In some interest rate environments--specifically, when the spreads between MBS yields and the yields on Fannie Mae's callable debt are sufficiently large--Fannie Mae can finance mortgages more cheaply with such debt than with MBSs. By serving as an additional source of funds, purchases for the GSE's portfolio may tend to reduce the volatility of mortgage rates relative to other interest rates. Also, Fannie Mae uses its portfolio to invest in mortgages that are difficult to securitize. In 1990, the GSE purchased about $6.8 billion of such nonstandard mortgages, which represented about 30 percent of the mortgages it purchased for its portfolio. In contrast, virtually all the loans purchased by Freddie Mac can be easily securitized.

Third, mortgages that would have gone into Fannie Mae's portfolio would be financed with MBSs issued by the two enterprises. This could increase the interest rate risk exposure of investors in the MBSs. In 1990, about two-thirds of Fannie Mae MBSs, and about half of Freddie Mac MBSs, went into REMICs. Although data are sketchy, federally insured depository institutions, particularly commercial banks, apparently purchase a large fraction--perhaps one-third--of REMIC classes. Banks and thrifts also purchase a large fraction of the GSEs' MBSs that are not placed in REMICs. On average, these institutions are less able to manage their exposure to interest rate risk--by estimating mortgage prepayments, issuing callable debt, and diversifying their portfolios with assets and liabilities of different interest rate sensitivities--than Fannie Mae or Freddie Mac. Consequently, there is a remote possibility that setting a capital requirement that led Fannie Mae to finance more of its mortgage purchases with MBSs could actually increase the federal government's exposure to risk from both the implicit federal guarantee of the GSE's securities and federal deposit insurance. The government could minimize this possibility by incorporating an interest rate risk component in federal risk-based capital standards for depository institutions, as the Office of Thrift Supervision has proposed to do for thrifts.

Continuing to Allow Freddie Mac to Increase Its Exposure to Interest Rate Risk. The interest rate risk component of a federal capital requirement for the two GSEs could continue to allow Freddie Mac to increase its exposure to interest rate risk in exchange for higher nominal returns. The enterprise has not chosen to do so in the past because it believes that the returns from developing a larger portfolio would not provide sufficient compensation for the required increase in its exposure to interest rate risk. Freddie Mac's risk preferences would have to change for it to alter its financing strategy. The GSE would also have to be willing to pay the start-up costs of developing a market in callable debt. Freddie Mac might be willing to change its strategy if it believed that Fannie Mae could use earnings from its portfolio to achieve pricing advantages and increase its market share. Any increase in Freddie Mac's exposure to interest rate risk would increase the risk that it posed to the government, to the extent that the GSE did not increase its capitalization.

Providing Statutory Direction About Setting a Risk-Based Capital Requirement

If the Congress gave HUD or another supervisory agency the authority to set a binding, risk-based capital requirement for Fannie Mae and Freddie Mac, it could provide guidance about how the agency should use the authority. This could be done by providing general statutory direction to the agency, or by placing greater statutory restrictions on its actions.

Providing General Guidance and Requiring the Use of Stress Tests. HUD could be required to base a capital standard on stress tests that evaluated each GSE's exposure to credit risk and interest rate risk, and on the department's evaluation of each enterprise's exposure to management and operations risks. In developing the tests, HUD could be required to take into account factors that affect mortgage defaults and prepayments, and to use empirical data to model the relationships. The department could also be required to publish the tests for public review and comment, just as it does for proposed regulations. HUD could change the tests on the basis of new information, but there would be a reasonable limit on how frequently it could do so, say, no more than once a year. The Congress could also implement a statutory minimum capital standard for Fannie Mae and Freddie Mac, expressed in terms of mark-to-market net worth. The department would be required to develop a methodology, in consultation with the GSEs, for estimating their mark-to-market net worth on a consistent basis.

This approach would enable HUD to adapt the stress tests used to set a risk-based capital requirement for Fannie Mae or Freddie Mac to reflect changes in the overall risk of the economy. The performance of the economy has often defied expectations in the last two decades. The risk of a severe, nationwide downturn, or a large, sustained increase in interest rates--the two events that pose the most risk to the enterprises--may increase in the future. It may therefore be prudent to allow the department to adjust the stress tests used to set capital requirements for the GSEs if an increase in overall economic risk occurs. HUD could also adapt stress tests to reflect changes in analytical techniques. Giving the department this flexibility could carry the danger that it would impose stress tests that required Fannie Mae and Freddie Mac to survive extremely severe economic conditions for a very long period--much more than a decade, for example. However, the required public review and comment probably would reveal any aspects of a proposed test that were unreasonable, which would diminish the likelihood that HUD could impose unreasonably severe tests.

Providing guidance and requiring the use of stress tests also would give HUD flexibility with respect to incorporating management and operations risks into a risk-based capital standard. Two arguments can be advanced for doing so. First, any stress test makes assumptions about how GSEs will behave in extremely adverse economic environments. Inevitably, there is considerable uncertainty about such assumptions. The department could be better informed about this uncertainty than the Congress. Second, the management quality or operating systems of Fannie Mae or Freddie Mac could deteriorate enough to cause financial losses to accumulate without showing up on the GSE's balance sheet as a decline in capital. This could happen, for example, if the delinquency and foreclosure rates of loans serviced by certain large seller/servicers worsened dramatically, but the enterprise took no steps to minimize its losses. If the department conducted thorough examinations of each GSE, it would be in a position to determine the appropriate amount of capital to protect against exposure to these risks.

This approach might allow HUD to require excessive amounts of capital to protect against nonquantifiable risks. Requiring public review and comment of the proposed capital standard could limit this risk. Another option, discussed in Chapter II, would be to allow Fannie Mae and Freddie Mac to reach a "safe harbor" from HUD's efforts to increase their capital if two private credit-rating agencies gave them a specified credit rating. One disadvantage of the latter remedy is that, if HUD discerned an unreasonable exposure to risk at a GSE that had achieved the required ratings, its hands would be tied. If the department conducted regular and thorough examinations of the enterprises' operations and required them to produce sophisticated data on their risk exposure, it would have better information about them than the rating agencies.

Requiring Specific Stress Tests and Capital Percentages for Management and Operations Risks. Alternatively, the Congress could place significantly tighter statutory restrictions on HUD's discretion. This could be done by specifying the stress tests or other criteria that the department would be required to use to set the credit risk and interest rate risk components of a capital requirement for Fannie Mae and Freddie Mac. For example, the GSEs could be required to have enough capital to absorb mortgage default rates that were 50 percent higher than those experienced on conventional loans originated in Texas in the first half of the 1980s. The amount of capital that HUD could require the GSEs to have to cover management and operations risks could be limited to a fixed percentage of the amount of capital necessary to comply with the credit risk and interest rate risk components of the capital standard.

This approach would enable the Congress to decide the severity of the economic stresses that Fannie Mae and Freddie Mac should be able to survive. If the systemic risk of the economy changed enough to warrant a change in the Congressional standard, HUD could seek to convince the Congress to strengthen it. However, limiting the department's discretion in this way would set a precedent of the Congress's micromanaging HUD's decisions with respect to the capital adequacy of the GSEs. This precedent would create the risk that, if either enterprise ever suffered losses that brought it out of compliance with its capital standard, the Congress would direct the department to weaken the standard. In short, the approach could limit HUD's incentive and ability to take independent action to assure the safe and sound operation of the GSEs.

Possible Economic Effects of Requiring the GSEs to Maintain More Capital

The federal government could require Fannie Mae and Freddie Mac to increase their capitalization more rapidly in the next few years than the GSEs would on their own. As discussed in Chapters II and V, higher capitalization could be required as part of a policy of imposing comparable capital requirements for the three housing GSEs. Higher capital levels at Fannie Mae and Freddie Mac would reduce the government's exposure to risk, but would impose costs on owners or borrowers.

As noted above, under baseline economic and operating assumptions, in the next five years Fannie Mae could increase its capital from 1.1 percent of assets and MBSs to about 2 percent. Under similar assumptions, Freddie Mac could increase its capitalization during that period from about 0.8 percent of all assets to about 1.2 percent. CBO expects that the GSEs could achieve such increases if they did not significantly increase the risk of their activities or their dividend payout rates, and economic conditions and mortgage rates remained stable. To achieve larger increases, the GSEs would have to issue stock, reduce the volume of mortgages they purchased, or increase the prices charged for their services. These changes would impose costs on owners or on the lenders and borrowers that the enterprises serve.

Potential Effects on Owners. If the GSEs issued stock or reduced their new mortgage purchases, but did not increase MBS guarantee fees or lower mortgage purchase prices, their expected earnings per share would decline. Lower expected returns could change the market value of Fannie Mae and Freddie Mac's common stock. It is not clear, however, whether and by how much stock prices would change, for two reasons. First, because both enterprises would be better capitalized, their overall risk would be lower and investors could require lower after-tax returns on equity. Second, share prices may already assume lower earnings per share. A reduction in uncertainty could even increase demand among investors and raise stock prices.

Potential Effects on Mortgage Borrowers and Housing Markets. Fannie Mae and Freddie Mac could cover the costs of more rapid growth in capitalization by raising the prices they charge, that is, by increasing MBS guarantee fees and lowering mortgage purchase prices. Higher prices would increase earnings and avoid any reduction in earnings per share from issuing additional stock.

The simplest way to assess how higher capitalization could affect prices is to examine the relationship between the initial capital investment that Fannie Mae and Freddie Mac make when they finance a loan, and the fee they would charge to guarantee securities backed by such loans. CBO estimates that a 25 percent increase in the initial capital investment made for newly purchased 30-year, fixed-rate mortgages would raise MBS guarantee fees by 3 to 5 basis points; a 50 percent increase would raise fees by 5 to 10 basis points; and a 100 percent increase, by about 10 to 15 basis points. These estimates assume that the required increase in capitalization would apply only to newly purchased mortgages. If the enterprises were required to issue stock to increase the capital backing all the mortgages they have financed, they would have to increase guarantee fees on new purchases much more in order to maintain returns. The estimates also assume that each GSE targets an after-tax return on equity of 16 percent. If their pricing assumed higher target returns, the increases required to support a larger initial capital investment would be larger. As noted above, however, higher capitalization might allow them to reduce target returns without hurting stockholders, which suggests that the estimated fee increases may be too large. Also, the enterprises might be willing to accept somewhat lower returns.

Whatever the effects, competition among the lenders that the enterprises serve could pass most if not all of the price changes through to borrowers in the form of higher interest rates on mortgages. In the next decade, however, innovations in data processing and telecommunications will continue to reduce the cost of originating and servicing mortgages. Some analysts argue that, as a result of these efficiencies and competition among lenders and servicers, there would be little net change in mortgage interest rates.[29]

An increase of 10 basis points in the interest rate on a 30-year, fixed-rate mortgage is equivalent to a borrower's having to pay an additional 1 percent--or one point--to purchase the home. Some borrowers would respond to such a cost increase by reducing the amount they were willing to pay for housing. This reduction in demand could reduce housing prices and construction activity in the short run. Housing prices would recover somewhat in the long run as growth in underlying demand caught up with supply.

Any permanent increase in mortgage rates caused by higher capitalization of Fannie Mae and Freddie Mac would have positive and negative effects on thrifts and other financial institutions that hold mortgages and MBSs. On the positive side, expected returns from investing in mortgages originated in the future (or MBSs backed by them) and financing the assets with debt would be higher. On the negative side, the market values of outstanding mortgages and MBSs would be lower.

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29. See, for example, Susan M. Wachter, "The Limits of the Housing Finance System," *Journal of Housing Research*, vol. 1, no. 1 (1990), p. 168.

CHAPTER V

THE FEDERAL HOME LOAN BANK SYSTEM

The Federal Home Loan Bank (FHLB) System provides funds to depository institutions, primarily thrift institutions, to finance lending for residential mortgages. Despite the current problems in the thrift industry, the FHLB system is very sound and appears to pose a negligible amount of risk to the federal government. The exposure of the FHLBs to credit risk is low, mainly because their loans to thrifts are collateralized by high-quality mortgage assets. The FHLBs also successfully control their exposure to interest rate risk. The system is well capitalized at present given the low risks of its operations, and the system's regulator, the Federal Housing Finance Board (FHFB), has broad authority to limit the risk taking of the FHLBs. Although the profitability of the FHLB system is expected to be affected by the thrift crisis, it should remain high enough to meet the system's financial obligations.

Despite this upbeat assessment, the FHLB system is at a critical juncture. Financial markets have evolved considerably since 1932 when the FHLB system was created. These markets (in conjunction with other governmental agencies) can now offer the services, though at somewhat higher prices, that were once provided only by the FHLB system. Thus policymakers must decide whether the system continues to provide social benefits that deserve special governmental support.

If the FHLB system is preserved, policymakers will probably want to address two other issues facing the system. First, the system is required by law to pay a fixed amount to offset the cost of resolving the thrift crisis. Such payments are likely to lead to a reduction in the system's membership and assets and, ironically, to a modest increase in the total costs of resolving the thrift crisis. Setting these payments as a proportion of the net income of the FHLB system (instead of as a fixed amount) would eliminate these effects. Second, the FHLB system is more heavily capitalized than are the Federal National Mortgage

Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), and this discrepancy is one factor that puts the depository institutions served by the FHLB system at a competitive disadvantage in financing conventional mortgages. Making the capital standards comparable for all three GSEs would equalize the implicit federal subsidies provided to them and would be a step toward leveling the playing field in the housing finance system.

This chapter describes the current activities of the FHLBs and shows how they maintain their exposure to credit risk, interest rate risk, and business risk at low levels. It does not, however, address operations and management risks, although these risks are probably not large.[1] Then, two methods that the government uses to control the overall risk taking of GSEs--capital requirements and regulatory authority--are analyzed. The section on regulatory authority, however, provides only a preliminary evaluation of the FHFB. A definitive assessment is not yet possible, because the FHFB was created little more than one year ago to replace the now extinct Federal Home Loan Bank Board (FHLBB), the agency that also regulated the thrift industry before 1990. The chapter concludes with a discussion of policy options for addressing the problems facing the system.

CURRENT ACTIVITIES OF THE FHLB SYSTEM

The FHLB system has traditionally been an important participant in housing finance in the United States. The system was created in 1932 as a network of 12 regional banks operating independently of each other but in a coordinated fashion overseen by a common regulator. Since their inception, the FHLBs have helped housing markets by providing services to their members. Membership was originally limited to savings and loan institutions (which are required by law to become members) and savings banks and insurance companies (both of which are allowed voluntary membership). The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) extended

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1. For information on the management and operations risk of the FHLB system, see Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises* (May 1990); and General Accounting Office, *Government-Sponsored Enterprises: The Government's Exposure to Risks* (August 1990).

voluntary membership to commercial banks and credit unions that have more than 10 percent of their portfolio in home mortgages or related assets. All members are required to purchase stock in their regional bank, which gives them limited ownership rights.[2] The current activities of the FHLB system include providing loans, risk management services, and banking services to members; helping to fund the resolution of the thrift crisis; and financing programs for affordable housing.

Advances

The most important activity of the FHLB system is the provision of loans (called advances) to its members. These advances provide members with a source of funds for short-term liquidity and for longer-term housing finance. The FHLBs raise money for these advances primarily by issuing bonds (called consolidated obligations) to investors in international capital markets. In essence, the FHLB system intermediates funds from international capital markets to local lenders and their housing markets, helping to ease regional imbalances in the demand for and the supply of funds for home mortgages.

The significance of advances to the FHLB system is clearly illustrated in its balance sheets and income statements (see Tables 20 and 21). At the end of 1990, advances to member institutions represented about three-quarters of the FHLB's outstanding assets, and consolidated obligations represented a similar amount of its outstanding liabilities. Similarly, receipts from advance borrowings are the largest source of income for the FHLBs, while payments to holders of consolidated obligations are their largest expense.

Uses of Advances. FHLB advances provide members with a source of short-term liquidity to meet such needs as large seasonal or unexpected withdrawals by depositors. Even though an institution may be sound, large withdrawals can cause serious problems, mainly because much of its portfolio may be tied up in relatively illiquid home mortgages. Access to advances can stabilize the source of funds to an institution, allowing it to maintain lending to its local housing market. About half of the $117 billion of FHLB advances at the end of 1990 had a maturity of one year or less, and were probably used to meet short-

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[2] Members receive a dividend on this stock, but do not receive capital gains; nor is the stock traded. Some regional FHLBs allow members to invest more than the required amounts in FHLB stock. Voluntary members, upon leaving the system (or involuntary members, upon liquidation), have always been allowed to redeem their stock investment at par, although redemption is at the discretion of the FHLB (and the FHFB, if redemption adversely affects the safety and soundness of the FHLB system). The members/owners elect the majority of the board of directors of their regional bank, and the remaining directors are appointed by the regulator.

TABLE 20. BALANCE SHEET OF THE FEDERAL HOME LOAN BANK SYSTEM (In millions of dollars, year-end)

	1980	1981	1982	1983	1984
Assets					
FHLB Advances	48,963	65,194	66,001	58,978	74,616
Cash and Investments	4,633	8,552	12,934	10,397	18,713
Other Assets	751	934	1,328	3,115	3,664
Total	54,347	74,680	80,262	72,490	96,993
Liabilities					
Consolidated Debt[a]	37,268	54,131	55,967	48,931	65,085
Deposits	10,074	11,934	14,732	11,873	18,844
Other Liabilities	975	1,835	2,149	3,952	4,359
Total	48,318	67,880	72,848	64,756	88,289
Capital					
Stock	5,160	5,827	6,269	6,395	7,200
Retained Earnings[b]	869	974	1,144	1,340	1,504
Total	6,029	6,801	7,414	7,734	8,704

(Continued)

SOURCE: Congressional Budget Office using audited financial reports provided by the Federal Housing Finance Board.

term liquidity needs. The FHLBs also offer medium- and long-term advances to members, providing a source of funds for home mortgage lending. At the end of 1990, about 15 percent of outstanding FHLB advances had a maturity of five or more years.

Prices of Advances. The FHLB advances are priced quite competitively and are among the cheapest sources of funds for most members.

TABLE 20. Continued

	1985	1986	1987	1988	1989	1990
Assets						
FHLB Advances	88,835	108,645	133,058	152,799	141,807	117,100
Cash and Investments	20,108	20,054	18,132	18,212	35,196	45,389
Other Assets	3,113	2,980	2,996	3,852	3,793	3,196
Total	112,056	131,679	154,185	174,863	180,786	165,686
Liabilities						
Consolidated Debt[a]	75,610	89,590	116,386	136,513	136,798	118,519
Deposits	23,315	26,952	20,362	19,050	25,913	31,114
Other Liabilities	3,026	3,329	3,693	3,780	3,880	4,428
Total	101,951	119,871	140,440	159,343	166,591	154,061
Capital						
Stock	8,313	9,485	11,281	13,177	13,385	11,104
Retained Earnings[b]	1,792	2,323	2,619	2,343	820	521
Total	10,105	11,808	13,745	15,520	14,205	11,625

a. Less pass-throughs to Freddie Mac.

b. Less contributions to the Financing Corporation and the Resolution Funding Corporation.

TABLE 21. INCOME STATEMENT OF THE FEDERAL HOME LOAN BANK SYSTEM (In millions of dollars, year-end)

	1980	1981	1982	1983	1984
Interest Income					
Interest and Fees on Advances	4,481	6,994	8,702	6,754	7,516
Investment Income	622	942	1,266	1,257	1,378
Other Interest Income	36	43	50	42	40
Total	5,139	7,980	10,019	8,053	8,934
Interest Expense					
Interest on Consolidated Obligations	3,377	5,674	7,397	6,207	6,727
Interest on Deposits	1,290	1,686	1,597	1,382	1,331
Other Interest	1	11	17	7	30
Total	4,668	7,371	9,011	7,597	8,088
Net Interest Income	471	609	1,008	456	846
Net Income					
Total Interest Income	5,139	7,980	10,019	8,053	8,934
Total Noninterest Income	15	20	65	415	427
Total	5,154	7,999	10,084	8,468	9,361
Total Interest Expense	4,668	7,371	9,011	7,597	8,088
Total Noninterest Expense	69	93	111	140	390
Total	4,738	7,464	9,122	7,737	8,478
Net Income	417	535	962	731	883

(Continued)

SOURCE: Congressional Budget Office using audited financial reports provided by the Federal Housing Finance Board.

TABLE 21. Continued

	1985	1986	1987	1988	1989	1990
Interest Income						
Interest and Fees on Advances	8,690	9,042	9,876	11,743	14,404	11,228
Investment Income	1,478	1,519	1,314	1,640	2,480	3,068
Other Interest Income	96	116	99	128	140	118
Total	10,264	10,677	11,290	13,511	17,024	14,414
Interest Expense						
Interest on Consolidated Obligations	7,758	7,857	8,548	10,288	13,074	10,824
Interest on Deposits	1,492	1,617	1,388	1,567	1,850	1,999
Other Interest	57	51	49	49	25	75
Total	9,307	9,525	9,986	11,904	14,949	12,899
Net Interest Income	957	1,152	1,304	1,608	2,075	1,515
Net Income						
Total Interest Income	10,264	10,677	11,290	13,511	17,024	14,414
Total Noninterest Income	362	696	438	301	303	277
Total	10,626	11,373	11,728	13,812	17,327	14,137
Total Interest Expense	9,307	9,525	9,986	11,904	14,949	12,899
Total Noninterest Expense	236	370	403	458	599	371
Total	9,543	9,895	10,389	12,362	15,548	13,270
Net Income	1,083	1,462	1,328	1,454	1,783	1,468

The "all-in" costs of many other sources of funds (certificates of deposit, commercial paper, and medium-term notes) are generally higher than the all-in costs of FHLB advances of comparable maturities.[3] But FHLB advances are not the cheapest source of funds for all thrifts. For thrifts with low operating costs, certificates of deposit may be cheaper (on an all-in cost basis) than FHLB advances. Moreover, the all-in costs of reverse repurchase agreements (reverse repos)--loans that generally use mortgage-backed securities (MBSs) as collateral and are brokered by Wall Street investment firms--are just as low as (and in 1987 were lower than) those for an FHLB advance.[4] But whole mortgages (that is, mortgages that are not converted to MBSs) are generally not accepted as collateral for reverse repos. In the few instances when they are accepted, more collateral is required, which raises the effective price of these repos above the costs of an FHLB advance. Furthermore, whole mortgages that cannot eventually be securitized by Fannie Mae, Freddie Mac, or others are not accepted as collateral for reverse repos.

The interest rates on FHLB advances are competitive for two reasons. First, the FHLBs' cost of funds is low. The interest rates on the consolidated obligations issued by the FHLBs are not too far above the rates on Treasury securities of comparable maturities, reflecting the implicit federal guarantee of these obligations and the liquidity and marketability afforded them by GSE status. Second, the operating costs of the FHLB system have been relatively low, allowing the FHLBs to achieve a satisfactory profit level while maintaining only a relatively moderate markup over the rates on consolidated obligations. Together these factors have led the average interest rates on advances

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3. The all-in cost represents the total cost of funds, including not only the interest rate but also the costs of broker fees, issuance costs, commitment fees, deposit insurance fees, reserve requirements, and collateral costs. For more details, see Jerry Hartzog, Richard Nelson, S. Wayne Passmore, and Patricia Remch, *Thrift Financing Strategies: An Analysis of the All-In Cost of Retail and Wholesale Funding for Thrift Institutions* (Federal Home Loan Bank of San Francisco, October 1990).

4. Although reverse repurchase agreements are short-term financial instruments, Wall Street investment firms can create synthetic long-term debt instruments using reverse repos and other financial instruments (such as interest rate swaps). The all-in cost of such synthetic long-term debt appears to be quite close to that of FHLB advances, although these estimates are imprecise.

to be roughly 60 to 65 basis points above comparable Treasury securities.[5]

Users of Advances. Most of the advances are used by very large savings institutions, primarily because these institutions hold most of their industry's assets. In the third quarter of 1990, about 80 percent of the outstanding advances to the thrift industry were to members with $1 billion of assets or more. In total, these members hold about 70 percent of the thrift industry's assets. Although asset holdings play the major role in explaining demand for advances, other factors matter as well. About half of all thrifts with assets of less than $1 billion had no outstanding advances from the FHLBs in the same period, which may reflect economic factors (such as the fact that advances are not always the cheapest source of funds for some thrifts) and historical factors (the fact that some thrifts have always relied on deposits in their local communities rather than on funds borrowed from the FHLBs).

Risk Management Services

The FHLBs also help members to control interest rate risk. Members are vulnerable to changes in interest rates when they finance fixed-rate mortgages with variable-rate deposits. If interest rates rise, the payments to their depositors can exceed the revenue from their mortgages, causing a decline in profitability.

The most common way in which FHLBs help members control interest rate risk is by setting up an interest rate swap, which is a contract between two parties who agree to exchange the interest payments on part of each other's obligations. For example, an FHLB might agree to pay part of the interest costs on a member's variable-rate deposits, if in turn the member agrees to pay part of the interest costs on the FHLB's fixed-rate obligations. Such an agreement allows the member to convert a variable-rate obligation to a fixed-rate one, thus lowering the effects of changes in interest rates on the member's portfolio. These swaps can help the FHLBs manage their own interest rate risk as well, as discussed in the section on interest rate risk.

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[5] This statement is based on a weighted average of advances of different maturities collected by the FHFB in January 1991. Analysis of the spreads in earlier years shows that they depend on both the maturity of the advance and market conditions. The spreads, especially those at short maturities, have narrowed significantly from their peaks in 1988 and 1989, when the stock of outstanding consolidated debt rose to its highest level.

The FHLBs also help members control interest rate risk by offering advances with a range of maturities, giving members greater flexibility in matching the maturities of their assets with those of their liabilities. For example, a member could finance a long-term, fixed-rate mortgage with a long-term, fixed-rate advance, and thus reduce its interest rate risk. Long-term advances, however, are not used very much to manage risk as only about 15 percent of the outstanding advances at the end of 1990 had a maturity of five years or more.

Banking Services

The FHLBs also provide banking services to members. These services include deposit accounts (such as simple checking accounts, overnight accounts, and term accounts), lock boxes, and check collection, processing, and settlement. The deposit accounts, many of which are interest-bearing, represented about 20 percent of the system's total liabilities at the end of 1990 and were the second largest source of funds to the FHLBs after consolidated obligations. Providing these services, however, appears to be more costly (and the profit margins lower) than providing loans to members in the form of short- and long-term advances. Because of these lower profit margins, the FHLBs of Dallas and Seattle have decided to cut back provision of these services. In addition, some analysts have questioned whether these services contribute to the FHLB's mission of housing finance, and the FHFB has initiated a study to address these questions and to determine what role the FHLBs should play in providing these services.

Financing the Resolution of the Thrift Crisis

The FHLBs also have helped to finance the resolution of the thrift crisis. FIRREA directed the FHLBs to make a one-time payment of $2.1 billion from their retained earnings, as well as a $300 million annual payment, to help cover the principal and interest costs on bonds issued by the Resolution Funding Corporation (REFCORP), an off-budget federal borrowing corporation established to finance the resolution of insolvent thrifts. REFCORP was authorized in August 1989 to float $30 billion of these bonds. The FHLBs have also contributed $680 million to the Financing Corporation (FICO), a similar corporation created to recapitalize the Federal Savings and Loan Insurance Corporation (FSLIC), which insured savings and loan institutions (S&Ls) until 1989. The effect of these activities on the FHLB system can be seen in its balance sheet (see Table 20). Retained earnings fell from $2.6 billion at year-end 1987 to $0.5 billion at year-end 1990.[6]

Community Investment and Affordable Housing

The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 requires that the FHLBs fund two programs for community investment and affordable housing. For both programs, the FHLBs offer low-cost advances to members who in turn provide loans to designated groups.[7] The first is the Community Investment Program, which supports loans made by members to homebuyers with incomes that do not exceed 115 percent of the median income in their area and to community-based organizations involved in commercial and economic development activities for low-income people. The program is oriented toward loans that may not meet the underwriting guidelines of Fannie Mae or Freddie Mac or for which no other secondary market exists. The FHLBs support these loans by providing advances, priced at the FHLBs' cost of funds plus administrative expenses. The total amount of advances provided in 1990 by the Community Investment Program was $497.5 million.

The second program is the Affordable Housing Program, which provides advances at subsidized interest rates to institutions that

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6. The $300 million payment for REFCORP does not appear on the income statement. Instead, the payment is made from retained earnings shown on the balance sheet. The reason for this unusual procedure is technical and related to the current accounting treatment of reserves. The procedure may be changed in 1992, but no final decision has been made.

7. Although the members often provide loans to low-income borrowers, the FHLB system itself is not exposed to possibly greater risk, because the advances are heavily collateralized with high-quality assets in members' portfolios.

finance homeownership by low-income households and provide funds for the purchase, construction, and rehabilitation of rental housing in which at least 20 percent of the funded units are affordable to households with very low incomes.[8] Savings institutions are required to pass the subsidy dollar-for-dollar on a present value basis from the advance to the mortgage. Although an evaluation of this program is premature at present, it appears to be meeting many of its goals. In 1990, slightly more than half of the funds was targeted to households with very low incomes, and about two-thirds of the loans were devoted to rental housing projects.

The subsidy for the Affordable Housing Program is paid by the FHLBs from their net income. This payment is a percentage of the preceding year's net income of the FHLBs, but is subject to a minimum fixed amount. The percentage was set at 5 percent annually for the 1990-1993 period, 6 percent in 1994, and 10 percent in 1995 and beyond. The minimum fixed amounts are $50 million annually for the 1990-1993 period, $75 million in 1994, and $100 million in 1995 and beyond.[9] So far, the FHLBs have spent or are planning to spend more than the minimum required on the program--$79 million in 1990 and $59 million in 1991. The fixed minimum amount, however, is likely to become a binding constraint in the future if the income of the FHLB system declines, as discussed in the section on business risk.

CREDIT RISK

Although the interest rate and other terms on a loan can compensate a financial institution for *expected* losses from default, the institution remains exposed to *unexpected* losses, which is the fundamental risk of providing credit. The exposure of the FHLBs to credit risk is quite small. Most of the system's assets are advances, which are backed by high-quality collateral. Because of the collateral, the advances have an unmeasurably low probability of default; no member of the system has ever defaulted on an advance in almost 60 years of the system's operation.

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[8] Low-income households are defined as those with incomes of no more than 80 percent of the median income in their area. Households with very low incomes are defined as those with incomes of no more than 50 percent of the median.

[9] The regulator of the FHLBs can temporarily suspend the Affordable Housing Program if it determines the program contributes to the system's financial instability.

Most of the other assets of the FHLB system also present little credit risk. The second largest category of assets in the FHLB portfolio is cash and investments, which represented 27 percent of the outstanding assets in 1990 (see Table 20). Almost all of these investments were in Treasury securities, GSE obligations, mortgage-backed securities guaranteed by Fannie Mae or Freddie Mac, or federal funds, which are typically overnight loans to large commercial banks to help these banks meet their reserve requirements. The credit risk of each of these assets is very low.

The FHLB system has controlled its exposure to credit risk on its advances using three methods. First, each bank has established underwriting standards, which are rules that limit the amount of credit extended to any single borrower. The exact form of these rules and the specific limits are determined by each individual bank, although many of these rules are similar at all banks. Second, each borrower must hold at least 5 percent of the value of its outstanding advances as FHLB stock, which the borrower would lose in the event of default. Third, all advances must now be backed by collateral of relatively high quality, whose value exceeds the value of the advance, thus providing a strong incentive for borrowers to repay. These collateral rules were strengthened by FIRREA, which specified the types of assets that would be eligible to count as collateral. In addition, the FHLBs have established guidelines on the amount of collateral needed to secure an advance (see Box 9 for more details). The types of eligible collateral are limited to four classes:[10]

- First mortgages on improved residential property that are not more than 90 days delinquent;

- Securities issued or guaranteed by the federal government or a GSE;

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[10] Collateral to obtain an advance must come from one of these classes. If the value of this eligible collateral falls after the member obtains the advance, the FHLBs can ask the member to put up additional collateral, but this additional collateral does not have to meet the eligibility rules set in FIRREA.

BOX 9
Risk Classes for Determining Collateral Requirements

The FHLBs have set guidelines for determining the amount of collateral needed to secure an advance. The guidelines place a borrowing institution in one of three risk classes based on its creditworthiness. Each risk class has its own set of rules. The FHLBs are free to set more stringent collateral rules than suggested by these guidelines, and some banks have done so.

The most restrictive class requires the borrower to place the collateral on **delivery status**, which means that the borrower must physically deliver the collateral to the FHLB. Borrowers are subject to the restrictive delivery status if the level of their regulatory capital is less than 2 percent of liabilities. Borrowers may also be subject to these restrictive rules at the discretion of the regional FHLB. Advances made to members in delivery status must be backed by collateral that has a market value of at least 125 percent of the advance if market values are determined quarterly, or 110 percent if market values are determined monthly.

A class of intermediate restrictiveness requires the borrower to place the collateral on **listing status**, which means that the borrower must specifically identify the collateral securing the advance and segregate it from other assets in its portfolio. In general, borrowers with capital between 2 percent and 3 percent of liabilities are placed on listing status, although the exact standards vary among regions. Advances made to members in listing status must be backed by collateral under the same rules as members in delivery status.

The least restrictive class places borrowers' collateral on **blanket status**, which means that borrowers are free to dispose of any portion of collateral provided that the remaining amount is sufficient to meet the collateral requirements. In general, borrowers receive blanket status if their regulatory capital is greater than 3 percent of liabilities, and they are operating profitably, although some banks use more stringent rules or different measures of capital. Under blanket status, members do not have to determine the market values of the collateral as do members in other status groups. Instead, they can use book values. Members in blanket status must have collateral with book values ranging from 100 percent to 175 percent of the advance. The median book value of such collateral was 170 percent of the value of the advance.

- Deposits in an FHLB;

- Other real estate, provided that it has a readily ascertainable value, that the FHLB has first claim on the collateral in the event of default, and that advances secured by such real estate do not exceed 30 percent of the member's capital.

The FHLBs have the right to call for more collateral if the market value of the collateral backing outstanding advances is deemed insufficient. During the mid-1980s, the FHLB of Dallas successfully used this right to protect itself from the effects of declining real estate values in its district. Such a right implies that the FHLB system could be well protected even during a severe nationwide downturn in the economy.[11]

Although advances were usually overcollateralized before passage of FIRREA in 1989, the collateral rules were not uniform at all banks. Moreover, the collateral was sometimes of lower quality, as many banks simply required that the advance be secured by any asset with ascertainable value and in which the bank had a first claim in the event of default.

Because advances made before FIRREA could be backed by other forms of collateral currently not eligible to secure advances, FIRREA also developed a set of transition rules. Under the law, an advance made before FIRREA can be renewed using ineligible collateral, but in such a situation the bank must follow an FHFB-approved plan for reducing these outstanding advances in an orderly manner. Currently, only a small fraction of outstanding advances are backed with ineligible collateral, according to the FHFB.

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[11] Although the FHLB system itself would be well protected, the taxpayer would still be exposed to risk because such a downturn would probably cause additional insolvencies among the nation's depository institutions, raising the costs of providing federal deposit insurance. For more details on federal deposit insurance and options for reform, see Congressional Budget Office, *Reforming Federal Deposit Insurance* (September 1990).

INTEREST RATE RISK

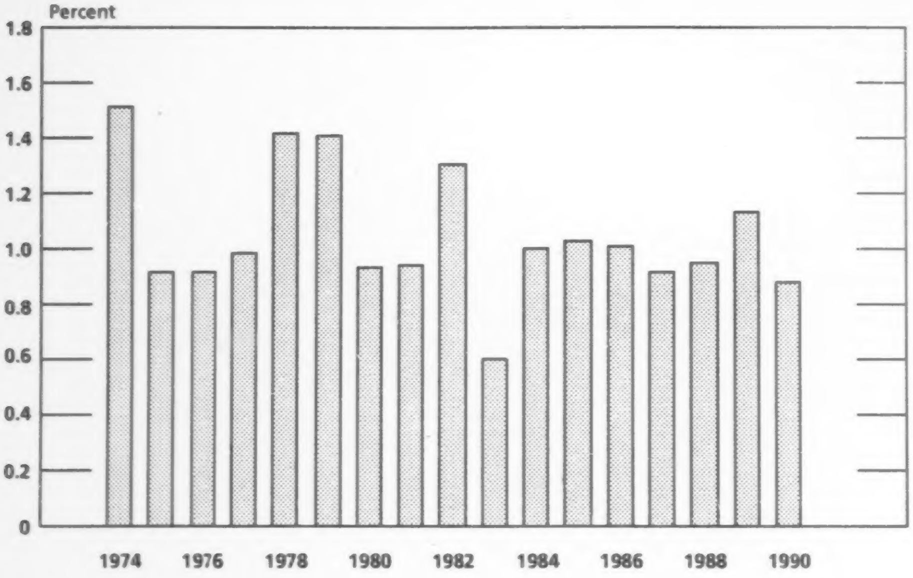
The FHLB system is exposed to interest rate risk from two sources. First, if the maturities of the assets and liabilities in an FHLB differ, then changes in interest rates can affect its net income. For example, if an FHLB financed a short-term asset with long-term debt, then a fall in interest rates would reduce its interest income from assets below its interest expense from liabilities. Second, changes in interest rates can affect the net income from loans that can be prepaid by borrowers. Suppose, for example, an FHLB had financed a long-term, prepayable asset (such as a loan) with a long-term liability. If interest rates fall, some of these assets would be prepaid as some borrowers refinance at lower rates. Such actions reduce the lender's income because the lender has to reinvest the prepayment income in a lower-yielding asset. Two assets in the FHLB portfolio are subject to this prepayment risk: FHLB advances and mortgage-backed securities.

The FHLB system has controlled its exposure to interest rate risk relatively well. As a simple, albeit indirect, measure of this success, the net interest income of the FHLB system relative to the average value of its assets (the net interest margin) has remained positive and relatively stable, largely within a range of 90 to 120 basis points over the past 15 years (see Figure 10). This performance occurred despite wide fluctuations in interest rates over much of this period. More sophisticated measures of interest rate risk are presented later in this section.

Management and Control of Interest Rate Risk

The FHLBs have employed four methods to control their exposure to interest rate risk. First, each bank attempts to match the maturities of its assets and liabilities. Long-term, fixed-rate advances are matched with consolidated bonds of similar maturities, and similar matches are found for short-term assets and liabilities. Variable-rate advances are

Figure 10.
Net Interest Margin of Federal Home Loan Banks, 1974-1990



SOURCE: Congressional Budget Office using audited financial reports provided by the Federal Housing Finance Board.

NOTE: Net interest margin is net interest income divided by average assets.

matched with either variable-rate bonds or short-term discount notes.[12] Such matching helps to ensure that a change in interest rates affects both sides of the balance sheet in a similar way at the same time.

Second, several FHLBs use interest rate swaps to reduce their risk. Such contracts essentially convert long-term liabilities into short-term ones (or vice versa), and thus provide the FHLBs with flexibility in synchronizing the maturities of their assets and liabilities. Although partners to a swap can be members of the FHLB system, the majority of these swaps are with nonmembers.[13] At the end of 1990, swap agreements covered about $32 billion--or 19 percent--of outstanding assets.

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[12] Some banks also control the interest rate risk of variable-rate assets by setting floors and caps on the amount by which rates can change.

Third, a few FHLBs also hedge their interest rate risk by using the cash, futures, and options markets. These markets are used primarily to lock in an interest rate for the period between when an advance is made and when its supporting consolidated obligation is issued (consolidated obligations are issued only on a monthly basis, but advances are made daily). No hedge in the futures market is perfect, however, and changes in interest rates can have different effects on the value of the hedge and the underlying security, which can lead to losses. FHFB regulations limit the risk of using these markets by requiring that the hedges be tied to specific assets or liabilities and be used solely to reduce interest rate risk. At year-end 1990, futures hedging amounted to about $0.9 billion.

Fourth, the FHLBs have developed methods for controlling the prepayment risk of mortgage-backed securities and advances. For mortgage-backed securities, the prepayment risk is limited by rules that prevent FHLBs from investing too heavily in these assets. Current FHFB regulations allow the banks to hold mortgage-backed securities and related assets, provided their value does not exceed 50 percent of the bank's capital. For advances, the FHLBs discourage prepayments by imposing a fee on borrowers who choose to do so.[14] The fee is approximately equal to the present value of the cash flow lost to the FHLB because the rate on a new advance is lower than the rate on the prepaid advance.[15] Thus, if the bank reinvests the prepaid loan balance plus the prepayment fee in a new advance, its net income will be roughly the same as before the prepayment.

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[13] Interest rate swaps introduce a "counterparty" risk, namely, the possibility that the other party could fail to live up to the agreement. In such a case, the FHLB suffers losses if it is unable to find a new swap partner willing to trade on the original terms and if interest rates have changed from the time that the original swap was made. The FHFB controls the impact of the counterparty risk by limiting the total amount of swap activity, defining acceptable parties for a swap, and requiring more collateral from lower-rated parties.

[14] The only exception is that the FHFB does not require banks to impose prepayment fees on variable-rate advances that reprice at least every six months, although banks are free to do so if they wish.

[15] Although banks have some discretion in setting the penalty, the FHFB requires that the prepayment fee be between 90 percent and 110 percent of the present value of the cash lost. The discount rate used to calculate the present value is the rate on new advances of the same maturity.

The prepayment fee, however, does not eliminate all of the interest rate risk on an advance. If the bank is unable to reinvest the prepayment income in a new advance, the bank could be forced to invest in a lower-yielding asset, causing net income to fall. The FHLB of Dallas is currently facing such a situation--and its income has been affected by it.[16] The FHFB is considering revising the regulations on investments in mortgage-backed securities to give FHLBs more opportunity to invest in these assets. Such a change, however, would raise the risk of prepayment in the portfolio, but these risks probably present less of a threat than the banks' current inability to invest prepaid advances in assets that cover costs. While such changes appear necessary for reducing the risks of the system in the short run, they raise questions about its long-run purpose. Specifically, if the FHLBs cannot make advances, to what extent should they be allowed to make other investments?

Indicators of Interest Rate Risk

The interest rate risk of the FHLB system can be examined by assessing how changes in the level of interest rates affect the mark-to-market net worth of individual FHLBs. The mark-to-market net worth of a GSE is the value of liquidating the GSE's assets and liabilities on a piecemeal basis (and thus excludes the franchise value of the GSE and other intangibles that make the whole GSE worth more than the sum of its parts). This net worth provides the first line of defense in protecting the federal government against losses. If a relatively small increase in interest rates had a large effect on mark-to-market net

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[16] The Dallas bank provided a large number of advances to help insolvent (and other) thrifts in the Southwest deal with liquidity problems in 1988, financing these advances with liabilities tied to the one- and the three-month London Inter-Bank Offer Rate (LIBOR) through swap agreements. As the Resolution Trust Corporation liquidated these insolvent thrifts, the advances were prepaid, but because of the poor demand for advances in the Dallas region, not all of the prepaid advances could be invested in new advances. Instead, the bank invested as much income as permitted in mortgage-backed securities, and the rest was put in overnight federal funds. When the interest rate on federal funds dipped below the LIBOR in January 1991, the earnings of the bank, though remaining positive, fell somewhat.

TABLE 22. ESTIMATED CHANGE IN THE MARK-TO-MARKET NET WORTH OF THE FEDERAL HOME LOAN BANKS FROM AN INCREASE OF ONE PERCENTAGE POINT IN INTEREST RATES

Regional Banks	Percentage Change in Mark-to-Market Net Worth
Boston	-0.7
New York	-4.0
Pittsburgh	-5.3
Atlanta	-1.5
Cincinnati	-0.2
Indianapolis	-2.5
Chicago	-1.6
Des Moines	-5.0
Dallas	-0.8
Topeka	-2.3
San Francisco	0.2
Seattle	-5.6

SOURCE: Congressional Budget Office using data from the Federal Housing Finance Board.

worth, the risk of exhausting net worth and becoming insolvent would be quite high; a low sensitivity of mark-to-market net worth to changes in interest rates would indicate little interest rate risk.

Estimates of how an increase in interest rates of one percentage point would affect the mark-to-market net worth of the FHLB system suggest that the system's interest rate risk is small (Table 22).[17] The FHLB of Seattle shows the largest estimate--its net worth would fall 5.6 percent for a one percentage-point increase in interest rates--but even for this bank, virtually all of the net worth would remain intact after such a shock. The other regional FHLBs show less sensitivity, with estimates for eight of the twelve FHLBs below 3 percent.

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[17] The estimates assume a parallel shift in the yield curve and take account of not only the usual on-balance-sheet assets and liabilities, but also the off-balance-sheet activities, such as interest rate swaps and hedges in the cash, futures, and options market.

For most of the FHLBs, higher interest rates would lower their mark-to-market net worth slightly, which is probably prudent in the current environment. As the Resolution Trust Corporation prepays advances held by insolvent thrifts, the average duration of the assets of the FHLBs will shorten relative to that of their liabilities, which implies that a rise in interest rates will have a smaller adverse effect on their mark-to-market net worth. Thus the small negative sensitivities shown in Table 22 are expected to move toward zero as the insolvent thrifts are resolved.[18]

BUSINESS RISK

Government-sponsored enterprises are also exposed to risk from operating in a specific line of business, and such risks can affect their profitability. For example, if demand for the goods and services provided by a GSE falls, its profitability could decline if it is unable to reduce its costs sufficiently. Although the FHLBs are likely to experience such a decline in demand, they should be able to reduce costs enough to keep their business risk at acceptable levels.

The major business of the FHLB system--providing advances--will probably shrink over the next several years, for two reasons. First and foremost, the traditional industry served by the FHLB system--the thrift industry--is shrinking. Second, certain provisions of FIRREA

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18. A zero sensitivity minimizes the interest rate risk to the FHLB system itself, but some analysts argue that this is not wholly desirable. These analysts believe that federal policy should aim to minimize the combined interest rate risks of the FHLBs and their members (largely federally insured depository institutions) because taxpayers are responsible for the failures of both groups through either the implicit guarantee of consolidated obligations or the explicit guarantee of federal deposit insurance. Since the mark-to-market net worth of most members deteriorates when interest rates rise, such a policy would require the mark-to-market net worth of the FHLBs to improve in such a situation. Although this argument is appealing, calculating the combined interest rate sensitivities is quite difficult at present, and if not done correctly, this alternative policy of targeting a non-zero sensitivity could expose the FHLBs to unnecessary risks.

TABLE 23. ADVANCES MADE BY FEDERAL HOME LOAN BANKS TO MEMBER INSTITUTIONS AS OF DECEMBER 31, 1990

Recipient of Advances	Advances by Regional Bank (Percent)					
	System Total	Boston	New York	Pittsburgh	Atlanta	Cincinnati
Members in Conservatorship	9	4	10	21	11	2
Members with Capital Ratios[a]						
Less than zero	13	6	31	25	13	1
Between zero and 1.5	9	4	24	10	9	0
Between 1.5 and 3.0	14	12	3	11	17	38
Between 3.0 and 6.0	46	34	22	19	40	38
Greater than or equal to 6.0	9	40	10	15	10	21
All Members	100	100	100	100	100	100

(Continued)

SOURCE: Congressional Budget Office using data from the Federal Housing Finance Board.

impede the recruitment of new members into the system. Consequently, the demand for advances and income from those advances is likely to fall in the future.

The shrinkage of the FHLB system should not significantly increase its risk of failure because the shrinkage is likely to occur in an orderly fashion. Although interest income from advances will fall, the FHLBs should be able to reduce their interest expense by issuing fewer consolidated obligations. If the FHLB system shrinks enough, additional cost savings could be found by merging some of the smaller regional banks with the larger ones. A likely by-product of a smaller FHLB system, however, is a modest increase in the cost of resolving the thrift crisis.

Decline in the Demand for Advances by the Thrift Industry

The FHLB system will almost certainly experience a major decline in its business of providing advances to the thrift industry in the coming years. Two factors account for such an outlook. First, a large number of outstanding FHLB advances are currently held by insolvent members. As the Resolution Trust Corporation (RTC) resolves these insti-

TABLE 23. Continued

Recipient of Advances	Advances by Regional Bank (Percent)						
	Indianapolis	Chicago	Des Moines	Dallas	Topeka	San Francisco	Seattle
Members in Conservatorship	0	7	0	20	31	5	0
Members with Capital Ratios[a]							
Less than zero	0	10	20	30	1	3	22
Between zero and 1.5	0	2	8	0	36	5	1
Between 1.5 and 3.0	9	2	25	11	1	21	9
Between 3.0 and 6.0	86	52	44	38	28	64	43
Greater than or equal to 6.0	5	27	3	1	3	1	25
Total	100	100	100	100	100	100	100

a. Ratio of capital to tangible assets (percent).

tutions, the advances will be prepaid.[19] Since most of the mortgage assets from these insolvent members will be sold to institutions who are not members of the FHLB system, the asset base of the FHLB members will shrink. As a result, fewer advances will be needed to meet liquidity and other needs.

The distribution of outstanding advances to FHLB members by capital-to-asset ratio is shown in Table 23. As of the end of 1990, about 30 percent of the outstanding FHLB advances were held by insolvent or near-insolvent institutions (those in conservatorship or with capital-to-asset ratios of less than 1.5 percent). The regional distribution of these advances is even more striking--about 70 percent of the advances by the FHLB of Topeka are to insolvent or near-insolvent members. Since the end of 1990, some of these advances have been prepaid, and more prepayments are expected in 1991. As this occurs, the asset base of FHLB members--and demand for FHLB advances--will decline.

Second, demand for advances will also fall because some solvent savings institutions are downsizing to meet the new and higher capital standards mandated by FIRREA. As of September 30, 1990, 17 percent of the S&Ls not in conservatorship failed to meet these new standards, and because many of these thrifts are having trouble finding investors to put up additional capital, they are being forced to sell existing assets and reduce their size. As a result, their demand for advances will fall.

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[19] The advances to insolvent institutions are overcollateralized just as other advances are, so providing advances to insolvent institutions poses little credit risk to the FHLBs.

Problems of Attracting New Members

Even though FIRREA opened up membership in the FHLB system to commercial banks and credit unions, the response by these potential members has not been overwhelming. Between January 1990 and February 1991, the system had attracted about 100 new members to its base of almost 3,000 members, and another 84 applications for membership were pending approval. But over the same period, the system lost about 400 members through mergers, resolutions, acquisitions, and voluntary withdrawals. Moreover, the commercial banks that have joined the system since passage of FIRREA represent only a small fraction of the total banks eligible for membership.[20]

The modest response of eligible institutions to the possibility of membership in the FHLB system stems from many factors, but among the most important is a perception that holding FHLB stock may not be a good investment. Although no member has ever lost its initial investment in FHLB stock, and the stock has usually returned dividend yields well above Treasury bill rates, potential members fear that future legislative action could confiscate FHLB stock to pay for the thrift crisis.[21]

If the system fails to attract new members, gross income from advances will fall, and as it does, the fixed payments to REFCORP and the Affordable Housing Program will take an ever larger fraction from it, which will cause dividend yields to fall significantly. Without new members, outstanding advances could fall to about $70 billion--roughly the current level of outstanding advances to members that are not in conservatorship and that meet the capital rules imposed by FIRREA. If advances fall to this level and interest spreads on advances and consolidated obligations remain near current levels, then the dividend yield on FHLB stock could fall about 300 basis points to the 6 percent to 7 percent range. This estimate is quite rough, however, and very sensitive to the assumptions on interest rate spreads. For example, if interest rate spreads change by 10 basis points, the dividend yield changes by 100 basis points.[22] Moreover, these estimated dividend yields are sensitive to assumptions about the number of new members who join the system.

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[20] The aggregate numbers on the recruitment of new members mask some significant differences at the regional level. Some banks have been successful in recruiting new members, with most of the new recruits concentrated in five districts: Boston, Cincinnati, Pittsburgh, Seattle, and Indianapolis.

[21] FIRREA took only retained earnings from the FHLB system, not members' initial stock investments.

If potential members could be persuaded to join and borrow, the FHLB stock could provide returns high enough to compensate for the perceived risk that the capital stock could be confiscated. Unfortunately, these expectations of low returns are largely self-fulfilling. To the extent that potential members decide not to join, the system shrinks, causing dividend yields to fall and justifying the original decisions not to join.

Effect of Lower Dividend Yields on the Costs of Resolving the S&L Crisis

Requiring the FHLB system to make fixed payments to REFCORP and the Affordable Housing Program makes the cost of resolving the S&L crisis slightly higher than it would otherwise have been. The FHLB stock is an asset of the S&L industry, and as the dividend yields on this stock fall, the industry's net income will experience a further decline. To the extent that these losses will be incurred by S&Ls that are already insolvent (and thus are the ultimate responsibility of the federal government), part of the fixed payment made by the FHLBs will be shifted back to the general taxpayer. More is involved than a simple shifting of costs among different groups, however. As insolvent S&Ls not in conservatorship (that is, not under government control) lose more money, they face greater incentives to invest in riskier assets.[23] These S&Ls have everything to gain if the gamble pays off--and nothing to lose if it does not. Lower dividend yields will also push a small number of near-insolvent S&Ls into insolvency, which will also raise the costs of resolving the crisis.

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[22] This estimate of the average dividend yield of the system masks some regional differences,which are likely to be significant. Districts that have been less affected by the S&L crisis and are able to attract new recruits will be able to pay dividend yields higher than 6 percent or 7 percent.

The exact magnitude of the effects of fixed payments on the costs of resolving the S&L crisis is impossible to calculate, because the extent to which these payments cause insolvent S&Ls not in conservatorship to take additional risks is unknown. But it is possible to estimate roughly how much income S&Ls lose as dividend yields on FHLB stock fall. Given estimates of the FHLB stock held by each S&L, the effect on net income of a decline in dividend yields is simply the product of a change in yields and the value of the FHLB stock. Such estimates are close to an upper bound, since the calculation assumes that dividend yields drop *before* any stock is redeemed. In reality, dividend yields will drop *as* insolvent S&Ls are closed by the RTC and FHLB stock is redeemed.

Based on these assumptions, CBO estimates that $50 million of the $400 million in annual fixed payments could be borne by insolvent S&Ls (those in conservatorship or operating with capital-to-asset ratios less than zero) if dividend yields fall the expected 300 basis points (see Table 24). Since these institutions are (or may eventually be) under government control, these costs will ultimately be borne by the general taxpayer. A decline of 200 basis points in the yield on FHLB stock reduces the net income of these insolvent S&Ls by $33 million, and a decline of 400 basis points leads to losses of $66 million. These costs, however, are very small compared with the current size of the S&L crisis. In January 1991, CBO estimated that the total cost of resolving the S&L crisis is likely to be over $200 billion in present value terms.

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[23] The ability (and incentive) of insolvent S&Ls to invest in risky assets was significantly reduced, but not eliminated, by several provisions of FIRREA. In addition, the Office of Thrift Supervision is monitoring insolvent S&Ls much more closely than its predecessor, the Federal Home Loan Bank Board. For more details on FIRREA, see James R. Barth, George J. Benston, and Philip R. Wiest, "The Financial Institutions Reform, Recovery and Enforcement Act of 1989: Description, Effects, and Implications," *Issues in Bank Regulation* (Winter 1990), pp. 3-11.

TABLE 24. EFFECT OF LOWER FHLB DIVIDEND YIELDS ON THE S&L INDUSTRY (In millions of dollars)

S&Ls	Number of S&Ls	Total Assets	FHLB Advances	FHLB Stock	Decline in S&Ls' Net Income Resulting from a Drop in Dividend Yields of		
					200 bps	300 bps	400 bps
In Conservatorship	179	78,616	10,648	822	16	25	33
With Capitol Ratios[a]							
Less than zero	108	85,548	11,111	828	17	25	33
Between zero and 1.5	94	80,115	9,357	769	15	23	31
Between 1.5 and 3	148	140,932	15,432	1,119	22	34	45
Between 3 and 6	845	497,712	48,421	4,103	82	123	164
Greater than or equal to 6	1,147	200,268	5,420	1,505	30	45	60
Total	2,521	1,083,227	100,388	9,146	183	274	366

SOURCE: Congressional Budget Office using data from the Federal Housing Finance Board.

NOTE: These estimates are based on data as of December 31, 1990.

S&L = savings and loan; FHLB = Federal Home Loan Banks; bps = basis points.

a. Ratio of capital to tangible assets (percent).

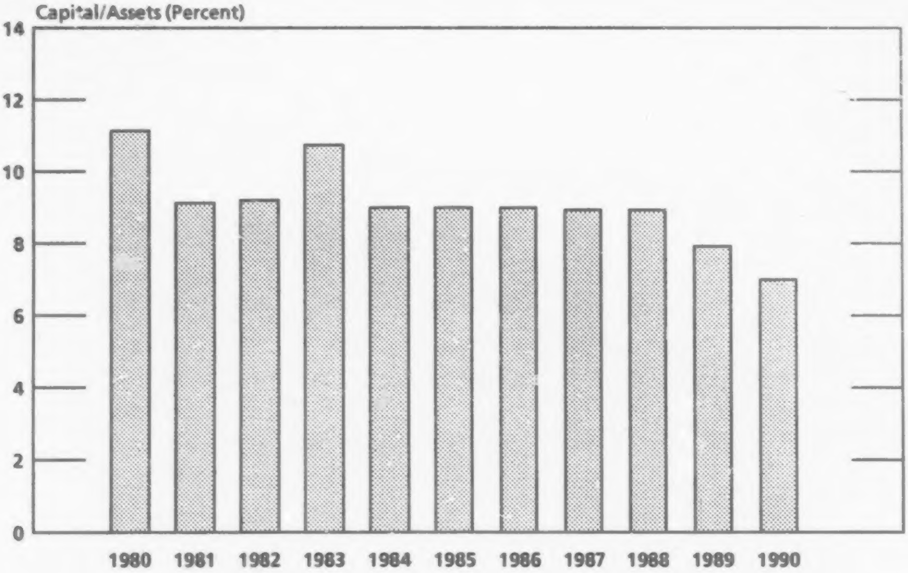
CAPITALIZATION OF THE FHLB SYSTEM

As the preceding sections showed, the FHLBs are not exposed to significant credit or interest rate risk. Paradoxically, they are required to hold relatively large amounts of capital relative to their assets. In contrast, Fannie Mae and Freddie Mac are permitted by the government to maintain much lower capital ratios. These differences imply that Fannie Mae and Freddie Mac receive a larger implicit federal subsidy than that given to the FHLB system.

Current Levels of Capital in the FHLB System

The FHLB system is well capitalized, with the value of capital averaging about 7 percent of assets at the end of 1990 (Figure 11). The capital-to-asset ratio has declined sharply over the past two years, but practically all of this decline stemmed from a one-time loss in retained earnings mandated by FIRREA. Capital ratios may continue to de-

Figure 11.
Aggregate Capital-to-Asset Ratio of the Federal Home Loan Banks



SOURCE: Congressional Budget Office using audited financial reports provided by the Federal Housing Finance Board.

cline, but they will probably not fall too much farther, because the system has a relatively strict set of capital standards.

The current levels of capital are more than sufficient to assure the system's safety and soundness, for two reasons. First, the assets of the FHLB carry very little credit risk. If the capital ratios were adjusted to reflect the riskiness of the assets, the risk-adjusted capital ratios of the FHLB system would probably be higher than the unadjusted ratio of 7 percent.[24]

Second, the legal nature of the FHLBs' consolidated obligations provides an additional line of defense against failure of the system.

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[24] For more details, see Federal Home Loan Bank of Atlanta, "Report to the Bank Presidents' Finance Committee from the Task Force on Proposed Risk-Based Capital Requirement" (August 28, 1990).

These bonds are the joint and several liability of the entire FHLB system, meaning that all of the regional FHLB banks are responsible for the bonds of any particular bank in the event of a default. Joint and several liability protects the federal government in both prospective and retrospective ways. Prospectively, it creates incentives for managers of FHLB district banks to monitor each others' activities and to inform the regulator about activities that appear to increase the risks to the system as a whole.[25] Retrospectively, it protects the federal government because the government is implicitly liable only if the net assets of the entire FHLB system are exhausted. Such a requirement reduces the risk to the taxpayer by spreading some of the risk of failure across the whole system.

Capital Standards of the FHLB System

The Federal Housing Finance Board enforces two types of capital standards designed to limit the riskiness of the FHLB system. First, members are required to hold some of their funds as capital in the FHLB system. Second, federal regulations require that the FHLB system as a whole must hold a minimum amount of capital against its outstanding consolidated obligations.

Stock Requirements for Members. Each member of the FHLB system must purchase stock in its regional bank, with the amount determined by the value of the member's total assets, home mortgages, and outstanding advances. Lower stock requirements are given to members deemed to be qualified thrift lenders (QTLs), which, after July 1, 1991, are institutions with 70 percent or more of their portfolio invested in mortgages or related assets.[26] QTL members must hold FHLB stock in an amount not less than any of the following:

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[25] This point is more than hypothetical: when the FHLB of Dallas accepted FSLIC notes, the value of which some analysts questioned, as collateral for advances during the 1980s, it faced considerable pressure (including the threat of lawsuits) from other banks to stop the practice.

[26] The major exception to this rule is that savings banks automatically receive the preferential treatment given to QTL members, regardless of the share of home mortgages and related assets in their portfolio. The qualifying assets for other institutions are loans to purchase, refinance,

(Continued)

- 0.3 percent of their total assets;
- 1 percent of their home mortgage assets;
- 5 percent of their outstanding advances.

Non-QTL members must comply with the first two requirements above, but are required to hold more stock against outstanding advances.[27] For example, a member with only 10 percent of its portfolio in qualifying assets is required to hold FHLB stock equal to 50 percent of its advances. The way in which this third stock requirement varies with the share of mortgage assets in a member's portfolio is shown in Figure 12. Because of the peculiarities of these rules, there is a break in the minimum stock requirements at the percentage needed to qualify for QTL status--in this case, 70 percent.

Non-QTL members face another restriction as well, namely, that advances to non-QTL members by any bank cannot exceed 30 percent of that bank's total outstanding advances. This restriction is likely to become a binding constraint in the near future for non-QTL members of the FHLB of Des Moines. This FHLB recently accepted a large commercial bank as a member. Other regional banks may face similar constraints if they recruit very large commercial banks into the system as well.

Rules on the Aggregate Level of Consolidated Obligations. Federal regulations impose a minimum capital standard on the system as a whole. The system must have capital in excess of 8$\frac{1}{3}$ percent of the outstanding consolidated obligations. In addition, the value of assets in the FHLB system that are free from any lien or pledge must exceed the

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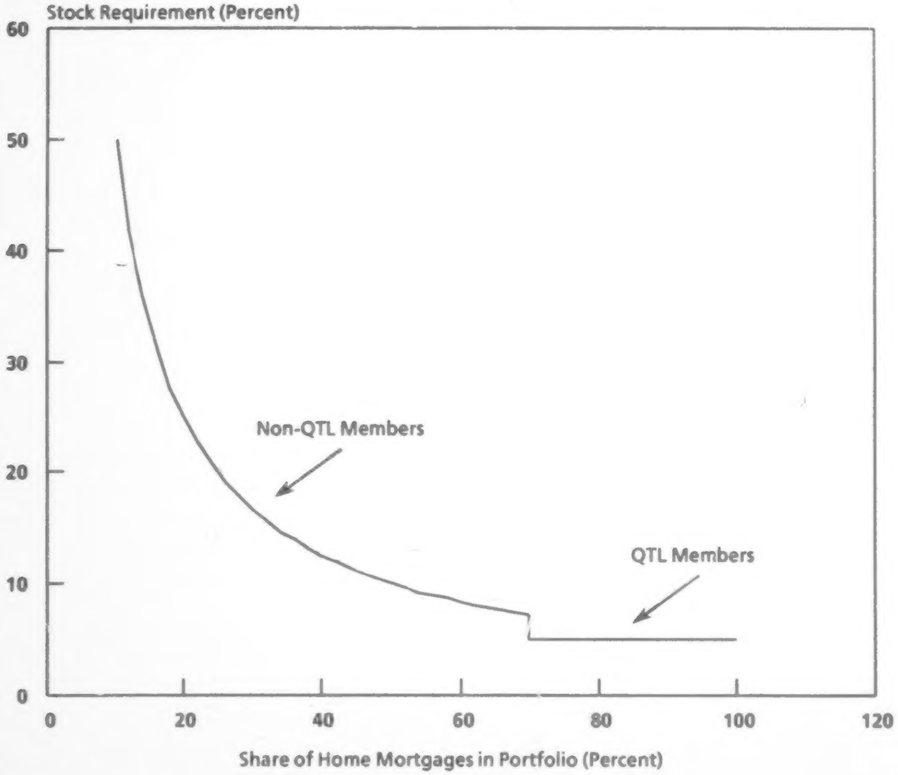
26. Continued

construct, improve, or repair residential housing; home-equity loans; mortgage-backed securities; obligations of deposit insurance agencies; and other miscellaneous assets. The total portfolio is defined as the tangible assets less the liquid assets required for regulatory purposes. The capital rules before July 1, 1991, are different from those presented in the text.

[27] Specifically, they must hold stock in excess of 5 percent of total advances divided by the fraction of mortgage and related assets in their portfolio.

value of outstanding consolidated obligations. At the end of 1990, the system exceeded these minimum standards, with the aggregate level of capital relative to consolidated obligations at 9.8 percent.

Figure 12.
Stock Requirements on FHLB Advances for Members of the Federal Home Loan Bank System



SOURCE: Congressional Budget Office calculations based on information from the Federal Housing Finance Board and from the Financial Institutions Reform, Recovery, and Enforcement Act of 1989.

Effects of the Capital Standards on Competition in Housing Finance Markets

The capital standards for the FHLB system and the thrift industry, along with other factors, have put savings institutions at a competitive disadvantage vis-a-vis Fannie Mae and Freddie Mac in financing conventional mortgages, particularly fixed-rate loans. Unless these and other rules are changed, current trends suggest that in the long run most conventional loans will be securitized by Fannie Mae and Freddie Mac, and these two GSEs are likely to dominate the market for loans that they are eligible to purchase.

Over the past decade, savings institutions have been shifting away from holding conventional whole mortgages in their portfolios. The share of outstanding residential mortgage debt financed by the thrift industry fell from 46 percent in 1981 to 26 percent in mid-1990 (see Table 14 in Chapter IV). In contrast, the share of mortgage debt financed by MBSs issued by Fannie Mae and Freddie Mac rose from 7 percent to 24 percent over the same period. Savings institutions have not dropped out of the mortgage market, however. Instead, they have boosted their holdings of mortgage-backed securities.

Not all mortgage products can be securitized and sold on national capital markets, however, and thrifts (and other lenders) will continue to play an important role in originating and holding these mortgages. For example, Fannie Mae and Freddie Mac are not permitted to purchase conventional mortgages whose value exceeds certain limits, and they will not purchase mortgages that do not meet their underwriting guidelines.[28] Although private conduits are beginning to play a larger role in securitizing loans that Fannie Mae and Freddie Mac cannot buy, there will continue to be a niche for lenders who originate and hold these specialized whole-mortgage products.

These developments have occurred in part because Fannie Mae and Freddie Mac can bear the credit risk of conventional mortgages more cheaply than can thrifts and other lenders. Four factors account for much of the cost advantage for these two GSEs. First, unlike many thrifts, Fannie Mae and Freddie Mac have achieved a broad geographic diversification of their portfolios, which reduces their exposure to credit risk and lowers their costs. Second, Fannie Mae and Freddie Mac have very large operations and, as a result, have achieved economies of scale that many thrifts, because they are smaller, do not have. Third, the capital standards for the FHLB system are much higher than those for Fannie Mae and Freddie Mac. This disparity allows Fannie Mae and Freddie Mac to outbid the thrifts (which rely in part on FHLB advances as a source of funds) in the purchase of conventional mortgage loans and still pay their shareholders an attractive return. Fourth, federal capital standards for the thrifts and other lenders create incentives for them to hold MBSs rather than whole mortgages. These standards require lenders to have capital levels equal to at least 4 percent of whole-mortgage holdings, but only 1.6 percent of MBS holdings.

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[28] In 1991, the purchase limit is $191,250 for first mortgages on single-family homes, except for mortgages from Alaska, Hawaii, and Guam where these limits are 50 percent higher. Higher limits are also set for loans that finance multifamily dwellings, and a lower limit exists for second mortgages.

These competitive advantages may allow Fannie Mae and Freddie Mac to capture the market for financing most conforming loans and nearly all conforming fixed-rate loans. Such a possibility raises concerns that these two GSEs could at some point exercise their market power and capture for their shareholders some of the implicit subsidy of their agency status, instead of passing it along to borrowers in the form of lower interest rates.[29]

FEDERAL REGULATION AND SUPERVISION

Along with capital, federal regulation and supervision play an important role in limiting the risk taking of a GSE. In the case of the

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[29] Although such market power would allow these two GSEs to capture some of their implicit subsidy, it is unlikely that they would use their market power to set interest rates on conventional mortgages at monopolistic levels. If they did, thrifts and other lenders would be induced to enter that market, driving interest rates down to levels reflecting their costs, plus an adjustment for normal profits. But because thrifts do not receive as large a subsidy as do Fannie Mae and Freddie Mac, thrifts would not be able to prevent these two GSEs from capturing some of the subsidy. For a more detailed description of this process, see William Baumol, John Panzar, and Robert Willig, *Contestable Markets and the Theory of Market Structure* (New York: Harcourt Brace Jovanovich, Inc., 1982).

FHLBs, the regulator has more than sufficient authority to prevent the system from suffering significant losses.

Throughout most of its history, the FHLB system was regulated by the Federal Home Loan Bank Board (FHLBB), the same agency responsible for regulating the thrift industry. In 1989, however, FIRREA abolished the FHLBB and created a new agency, the Federal Housing Finance Board, to take over the regulation and supervision of the FHLB system. FIRREA provided the FHFB with the explicit authority to accomplish four objectives: supervise the banks, ensure that the banks carry out their mission of housing finance, ensure that the banks remain adequately capitalized and are able to raise funds in the capital markets, and ensure that the banks operate in a safe and sound manner. In addition, FIRREA requires that the FHLB system provide funds to REFCORP and the Affordable Housing Program, implying that a fifth objective of the FHFB is to ensure that the system has sufficient net income to cover these payments.

Statutory Authority of the Regulator

The FHFB has been given broad powers--much broader than those provided to the regulators of the other GSEs and arguably more encompassing than necessary to ensure the safety and soundness of the FHLB system. The FHFB has the authority to determine the compensation of the board members of each FHLB, to suspend or remove any of those board members (as well as any other bank employee), and to liquidate or reorganize a bank if necessary. The FHFB has the final word on each bank's budget, quarterly dividend payments, and applications for new members. Although the FHFB lacks the explicit authority to issue banklike cease and desist orders, it can obtain injunctions from the courts to stop unsafe practices. These powers give the FHFB more than sufficient authority to achieve its objectives.

At present, the FHFB is exercising these broad powers quite fully--and in a few instances may be more involved than necessary in the management of the individual FHLBs. Although such extensive involvement does not present a significant risk to the taxpayer and clearly remains within the FHFB's legal authority, it can slow decisionmaking within the system. For example, the FHFB recently rescinded an earlier rule that gave the regional FHLBs flexibility to exceed their budgets by as much as 10 percent. The rescission effectively prevents the banks from spending even one dollar more than budgeted without prior approval from the FHFB. As another example, the FHFB recently ruled that the regional banks need its approval before making capital expenditures of more than $10,000 for banking services (such as check processing). This limit prevents the banks from purchasing fairly small items, such as high-powered personal computers for banking services, without the consent of the regulator. The FHFB justifies this limit on the grounds that it is currently reviewing whether these banking services contribute to the FHLBs' mission of housing finance. Pending the outcome of this review, the FHFB wants to control the banks' capital investments in this area.

Start-Up Problems of the Regulator

In its first full year of operation, the FHFB experienced some difficulties in accomplishing its goals, but none of these problems seriously threatened the safety and soundness of the system. In fact, many of them were inevitable, reflecting the problems of trying to develop a new regulatory agency. Moreover, the FHFB has already taken action to correct some of these problems.

The FHFB faced three types of difficulties during the first year. First, the FHFB inherited from the previous regulator an inadequate system of information management and control. For example, the Federal Home Loan Bank Board allowed each bank to develop its own methods of tracking collateral. As a result, these methods are currently not comparable across the banks, making it impossible to present a simple table on the amount of collateral that does not meet the eligibility guidelines set in FIRREA. In other areas, the FHFB does not have timely data on the amount of capital that each member has invested in the FHLB system, and during 1990 the FHFB did not have historical data on each bank's balance sheet and income statements in an electronic form that could be used for financial analysis. Since the beginning of 1991, however, the FHFB has addressed this problem and developed a computerized data base for financial management.

Second, the FHFB has been slow in conducting on-site examinations of the banks, largely because it has taken time to recruit competent staff. The FHFB had only one on-site examiner to inspect all 12 banks throughout most of 1990, and conducted no on-site examinations during that year. The FHFB, however, had a staff of 20 analysts to conduct off-site monitoring of the FHLBs during 1990. Moreover, the FHFB recently hired two additional on-site examiners and has budgeted funds for hiring an additional six examiners by year-end. A schedule for on-site examinations of the banks has been set for 1991, and the first one was conducted on March 15.

Third, there have been delays in approving both budgets and membership applications. The 1991 budgets for the regional banks were not approved by the FHFB until three weeks into the beginning of the new year, and during 1990 the application process set up by the FHFB for new members was complex, slow, and redundant. Although some regional banks successfully recruited new members, the FHFB took months to approve these applications. The delay in approving budgets resulted because the directors for the FHFB were not appointed until the middle of December 1990 and needed time to review these budgets. The delay in approving new members, however, was probably unnecessary, because all new members must meet the collateral and underwriting standards for advances, which play the primary role in limiting risk. In January 1991, the FHFB directors streamlined the membership process to reduce these delays, but it is too early to evaluate the effects of this new policy.

POLICY OPTIONS FOR THE FEDERAL HOME LOAN BANK SYSTEM

Policymakers are faced with three choices that will affect the future of the FHLB system. First, they must decide whether the system continues to serve public policy objectives effectively. Financial markets have evolved considerably since 1932 when the FHLB system was created, and these private markets (in concert with other government agencies) can now provide all of the services once provided only by the FHLBs. These private-market alternatives, however, may cost more. Thus policymakers should decide whether the services offered by the

FHLBs have sufficient social benefits to justify retaining the FHLB system. If the services provided by the system are not viewed as having a special social value, most economists would agree that the system deserves no special subsidies and should be phased out.

Second, if policymakers decide that the FHLB system should be retained, they may wish to consider options to help offset the projected shrinkage of the system. In particular, some of the provisions of FIRREA have created destabilizing dynamics that impede the recruitment of new members into the system and thus contribute to its shrinkage. Simple legislative changes can eliminate these problems.

Third, policymakers may wish to rethink the role of the FHLB system in the context of the other two housing GSEs--Fannie Mae and Freddie Mac. The capital rules for the FHLB system are much tougher than those imposed on Fannie Mae and Freddie Mac. Making the capital standards more reflective of the risks posed by each of the housing GSEs would improve the viability of the FHLB system and would be a step toward creating a more level playing field in the nation's housing finance system.

Is the FHLB System Still Needed?

Economists generally agree that government intervention in the private economy is justified if private markets fail to provide the optimal allocation of resources to different sectors. The FHLB system was originally created in 1932 to deal with such a failure in the market for housing finance. Before the inception of the FHLB system, home mortgages in each community were financed almost exclusively with the savings deposits of that community. But such a system of housing finance was vulnerable to fluctuations in local economic conditions. The FHLB system helped to overcome this problem by creating a link between national capital markets and local housing markets. In doing so, the FHLB system stabilized funds to the housing markets, reduced the riskiness of housing investment, and lowered the costs of homeownership.

But private financial markets have evolved since the 1930s and can now provide many of the services once provided only by the FHLB system. In addition, thrifts now have access to the discount window at the Federal Reserve for emergency funds, and other governmental agencies can (or could be designed to) fulfill the system's role in financing the resolution of the thrift crisis and programs for affordable housing. Thus the FHLB system no longer plays an essential role in overcoming imperfections in the housing finance system. As a result, analysts who believe that the government should intervene in the economy only if the private market cannot provide a comparable service would support phasing out the FHLB system. Not all analysts, however, share this view of the government's role in the economy. Policymakers therefore must decide whether the free market today could provide sufficient resources to the housing sector. If they believe it could not, they must decide how large a subsidy this market should receive, who should get it, and how it should be administered.

Addressing this issue fully is beyond the scope of this report on the risks posed by GSEs, but it is worth noting that if policymakers wish to subsidize the housing market, the FHLB system does not make a major contribution toward this goal under current laws and regulations. Because the FHLBs are required to be highly capitalized, the all-in costs of FHLB advances are not much lower than those of some privately provided alternative funds. Such pricing may partly explain why about half of all thrifts have no outstanding advances from their regional FHLB. Furthermore, CBO is not aware of any evidence that these slightly subsidized prices on FHLB advances to savings institutions result in lower mortgage rates to borrowers. As a consequence, eliminating the current system would probably not have a major impact on the mortgage markets, although elimination would certainly raise the costs of funds to some thrifts and reduce their net income, and could diminish their activities in the mortgage markets. In addition, eliminating the system could adversely affect federal spending on programs for affordable housing, unless alternative programs (that could replace those administered by the FHLBs) were funded.

Of course, if the FHLB system were redesigned and allowed to reduce its capital to the level of that of Fannie Mae and Freddie Mac, the interest rate on FHLB advances would fall significantly, with its spread over comparable Treasury securities dropping to one-half of its current level without affecting dividend yields. Such a change in capital standards would raise the size of the subsidy provided by the FHLB system and draw more of the economy's resources into the housing sector. But such a subsidy must be paid for by accepting a higher level of risk. Whether this is desirable is a value judgment that only policymakers can decide.

If policymakers decide to eliminate the FHLB system, it should be accomplished gradually. A poorly designed and hasty shutdown of the system could lead to some temporary disruptions in financial and housing markets and could inadvertently cause talented managers and employees of the system to leave the system prematurely, raising risks to the federal government during the shutdown. A gradual phase-out with a well-defined timetable could help to mitigate both of these effects.

Eliminating the Problems Created by FIRREA

Two provisions of FIRREA have reduced the viability of the FHLB system and impeded the recruitment of new members: the fixed minimum payments for REFCORP and the Affordable Housing Program, and the rules that define qualified thrift lenders.

Changing the Fixed Minimum Payments. Changing the fixed payments of $300 million for REFCORP and $100 million for the Affordable Housing Program (AHP) to percentages of income could improve the viability of the FHLB system. These fixed payments currently represent a destabilizing influence on the system. As the system shrinks, these payments take an ever larger fraction of its net income, causing dividend yields to fall and discouraging new members from joining. Lower dividend yields also reduce the net income of insolvent thrifts, which adds to the costs of resolving them. Changing these payments to a percentage of net income would help to maintain dividend yields even if the FHLB system shrinks. Although such changes make the system more viable and more capable of generating higher incomes (and possibly higher payments for REFCORP and the AHP), growth is not guaranteed. If such growth fails to materialize, payments to the

AHP would be lower and the taxpayer would pay a larger share of the bill for REFCORP.

Changing the Rules for Qualified Thrift Lenders. The current membership rules generally require financial institutions that are not qualified thrift lenders to purchase significantly more FHLB stock in order to get FHLB advances. Such stock requirements reduce the attractiveness of membership for non-QTL institutions because of the perceived riskiness of this stock investment. Setting less stringent QTL rules could increase membership among these institutions--perhaps by quite a bit, since many potential members (especially commercial banks) are non-QTL institutions.

In addition, non-QTL members face other restrictions that also limit the attractiveness of membership. Current statutes limit the advances made to non-QTL members by any bank to no more than 30 percent of that bank's total outstanding advances. This restriction is likely to become a binding constraint in the near future for non-QTL members of the FHLB of Des Moines and possibly other districts as well. Raising the proportion of advances allowed to non-QTL members (or eliminating this restriction altogether) could help to offset the shrinkage of the system's membership and assets.

Policymakers may also wish to consider eliminating the distinction between QTL and non-QTL institutions based on the strict percentage of the bank's assets invested in home mortgages. This percentage does not necessarily have a close relation to a bank's influence on housing and mortgage markets. For example, a large commercial bank may have less than 70 percent of its portfolio in home mortgages, but because it is so large, the dollar value of its mortgage holdings--and its influence on the housing markets--may be quite substantial. In the aggregate, commercial banks now hold almost as much mortgage debt as do thrifts, although fewer than 2 percent of the commercial banks pass the QTL test.

Some savings and loan institutions, however, view the preferential treatment given to QTL members as one of the few surviving advantages of an S&L charter and oppose allowing non-QTL members (such as commercial banks) equal access to the FHLB system. But the benefits of preferential access are not large, because the all-in costs of FHLB advances are not much lower than those of alternative sources of funds. Furthermore, improving the profitability of the FHLB system through expanded membership may provide benefits that offset the losses in the value of an S&L's charter.

Creating a Level Playing Field for the Housing GSEs

The FHLB system receives a much smaller implicit federal subsidy than do Fannie Mae and Freddie Mac, because the system is required to hold much larger amounts of capital against its assets than either of the other two GSEs. This differential subsidy is one factor, among many, that provides competitive advantages to Fannie Mae and Freddie Mac over wholly private lenders who rely on FHLB advances. Making the capital standards for the FHLBs comparable with those of Fannie Mae and Freddie Mac would eliminate this advantage. Such a change would enhance the competitive position of wholly private lenders, which may help to ensure continued competition in the market for conventional mortgages, reducing the chance that Fannie Mae and Freddie Mac could capture the implicit government subsidy for their shareholders instead of delivering it to mortgage borrowers.

The outcome of such a competition between wholly private lenders and Fannie Mae and Freddie Mac, however, is by no means certain. As discussed earlier, real economic factors also account for the competitive strength of Fannie Mae and Freddie Mac. These two GSEs can finance mortages at relatively low costs, because their portfolios are geographically diversified, their operations are large enough to achieve substantial economies of scale, and their management teams are highly skilled. Although some wholly private lenders are exceptionally well run and have made extraordinary progress in reducing their costs, many other lenders have not had as much success. Moreover, the relative efficiency of financing mortgages through wholly private lenders rather than through MBSs is unknown at present. But making the levels of implicit federal subsidies comparable between these two financing methods would be a step toward letting the market--rather than governmental rules--decide which was more efficient in providing services.

Making the playing field truly level, however, involves more than simply adjusting the capital standards. The tax rules on the different players in this market would have to be harmonized. In particular, the explicit corporate tax rates on Fannie Mae and Freddie Mac would have to be made comparable with the implicit tax rates on the FHLB system (resulting from the payments to REFCORP and the Affordable Housing Program). In addition, the myriad of other regulations affecting these GSEs and wholly private lenders would also have to be harmonized, although accomplishing such a task would be difficult.

Comparability across the housing GSEs could be achieved by requiring all three to obtain a high rating from a private rating agency without any implicit guarantee from the federal government, or to survive the same stress tests for credit and interest rate risk and maintain comparable capital to protect against management and operations risks. Comparability could involve lowering the capital requirement of the FHLB system, or raising the requirements for Fannie Mae and Freddie Mac, or both. If the capital rules for the FHLBs are eased, the banks would be able to pay higher dividend yields or provide lower advance rates, which could attract new members and improve the system's viability. But such easing would involve a trade-off of higher risks, and the degree of risk (and the implicit subsidy) depends in part on the level of the capital standard selected.

Policymakers may also wish to level the playing field further by allowing the FHLBs to issue MBSs, like Fannie Mae and Freddie Mac. Giving the FHLBs authority to issue MBSs, however, could lead to higher risks. To control these additional risks, it may be desirable to consolidate the district banks into one bank. Consolidated management of the system would make it easier for the banks to establish and maintain uniform standards that participating lenders would have to meet in order to sell mortgages to the system. In addition, consolidation would allow the system to react quickly and decisively to problems as they emerged and to modify these standards as needed.

CHAPTER VI

STUDENT LOAN MARKETING ASSOCIATION

The Student Loan Marketing Association (Sallie Mae) is a privately owned, federally chartered financial intermediary that has achieved its public purposes of providing financing and liquidity to the student loan market by issuing debt in the capital markets and providing funds to lenders who deal directly with students. The risk to the government and taxpayers arises--as with all GSEs--from the implicit federal guarantee of Sallie Mae's debt securities and the possibility that the enterprise might not be able to meet all of its debt obligations without federal assistance.

In the case of Sallie Mae, the consensus--including this report--is that the risk to the government is quite small, probably negligible, at present. But the implicit federal guarantee raises the policy issue of what action--if any--the federal government should take now to address the possibility that Sallie Mae might adopt a significantly more risky financial posture in the future. At least three federal strategies are available. The first is to sever the link between the federal government and Sallie Mae, thus terminating all federal responsibility for the debt of the enterprise. The second is to put in place an enhanced "early warning" system for detecting increases in risks the association assumes. The third is to give a federal agency statutory authority to limit Sallie Mae's ability to choose more risky lines of business and modes of operation. The first strategy is appealing if it increases competition in the education finance system, assures continued access by education to the capital markets, and achieves a genuine separation. If, however, the government wishes to maintain a close relationship with the dominant firm in this market, then adding an early warning or supervisory mechanism to an otherwise unchanged Sallie Mae could be prudent. If the third option is chosen, consideration could be given to establishing a streamlined supervisory process or permitting Sallie Mae to reach a "safe harbor" from federal regulation, provided that the enterprise continues to adhere to the highest commercial standards of safety and soundness.

This chapter examines Sallie Mae's role in financing higher educa~~tion and~~ the federal exposure to risk from the firm's operations. The government's risk is quite low because Sallie Mae's current exposure to risk is minimal.[1] The chapter also examines several specific options for limiting the GSE's ability to increase the government's exposure to risk in the future.

SALLIE MAE AND POSTSECONDARY EDUCATION FINANCE

In 1972, the Congress established Sallie Mae as a shareholder-owned corporation to provide funding to institutions that make loans to students enrolled in postsecondary schooling. Its creation was one of several related Congressional initiatives to assure financing of student loans by the private sector.

Students as Credit Risks

From the perspective of a commercial lender, a college student is often an unattractive credit risk. As potential borrowers, students rarely have an established credit record or sizable assets. Instead, they tend to have little income, uncertain earnings prospects, "unconventional" living arrangements, and a tendency to move frequently from one residence to another. At best, such a candidate for a bank loan would be regarded as a credit prospect whose loan would be more costly to service than a loan to a high-quality borrower.

Part of the motivation for federal intervention in the market for student loans stems from an appreciation of these barriers to commercial lending for postsecondary education and the fear that, left unaddressed, too little spending for postsecondary study would occur. Further, the federal government's broader geographic presence and its ability to tax a student's future earnings gives the government some advantages over local commercial lenders in managing the credit risk students pose. At the same time, the federal government is inexperienced in processing and managing the large body of information required to originate, monitor, and service millions of relatively small loans to individuals. Consequently, federal policy toward student loans is aimed at reducing credit risk to the lender and thereby lowering rates to students, raising gross returns to lenders to compensate for the high servicing costs of student loans, and capitalizing on private experience with loan servicing.

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[1] CBO has assessed Sallie Mae's exposure to risk on the basis of publicly available data.

Current Structure of the Student Loan System

Today, under the Higher Education Act of 1965, as amended, the federal guaranteed student loan (GSL) programs provide low-interest loans to students (and parents of students) attending participating universities, colleges, and trade schools. Commercial lenders, or in some cases state agencies and schools, originate these loans, which are guaranteed by state or nonprofit guarantee agencies and then reinsured by the federal government (see Box 10). The GSL programs assure lenders of a gross rate of return above the Treasury bill rate and guarantee against default losses. Before Sallie Mae was created, however, lenders were sometimes reluctant to participate in these programs because the loans were illiquid (hard to turn into cash) and long-term and because the costs of servicing the loans increase when the student leaves school.

Sallie Mae complements the GSL programs, therefore, by providing originators with an option to sell student loans and--thereby--accomplish the dual objectives of converting the loan back into cash and transferring the servicing costs to the GSE. Sallie Mae also constitutes a source of funds that originators may tap to make and hold student loans. Through its public policy purposes of creating a resale or secondary market for GSLs and providing debt financing for lenders, Sallie Mae has increased the supply of privately originated student loans.

BOX 10
The Guaranteed Student Loan Program

The term guaranteed student loans now refers to four distinct types of loans: Stafford Loans, Parent Loans to Undergraduate Students (PLUS), Supplemental Loans to Students (SLS), and Consolidation Loans. There are also other federal student loan programs.

Stafford Loans. In July 1988, the original Guaranteed Student Loan (GSL) program was renamed the Stafford Loan program. Under this need-based program, borrowers pay below-market rates of interest that are stipulated by law. For example, borrowers currently are charged 8 percent for the first four years of repayment and 10 percent for the remainder of the term. To provide an attractive rate of return to the lender, the federal government pays a quarterly "special allowance" in addition to the rate paid by the borrower. This allowance is calculated quarterly by (1) determining the average rate on the 91-day Treasury bills auctioned during the quarter, (2) adding 3.25 percent, (3) subtracting the interest rate paid by the borrower, and (4) dividing by four. In addition to paying a special allowance, the federal government subsidizes these loans by paying all of the interest on the loan while the student is enrolled as a full- or part-time student and for a grace period, usually defined as the six months after the student leaves school.

PLUS and SLS Loans. Both the PLUS and SLS programs provide supplemental loans for postsecondary education. PLUS loans provide additional funds to parents of dependent children, while SLS loans provide funds to independent undergraduate, graduate, and professional students. Borrowers pay a variable interest rate, capped at 12 percent, based on the 52-week Treasury bill rate. This rate, which changes annually, is set at 11.49 percent until June 30, 1991. The federal government may or may not pay a special allowance. If the bond equivalent rate on the most recent 52-week Treasury bill auction held before June 1 plus 3.25 percent is greater than 12 percent, then the government pays a special allowance. If this interest rate calculation is less than 12 percent, no special allowance is paid. The special allowance is calculated using the same formula used for Stafford loans. Unlike the Stafford Loan program, under PLUS and SLS the borrower commences payment immediately upon disbursement.

Consolidation Loans. The Higher Education Amendments of 1986 authorized lenders to consolidate loans administered under the various guaranteed student loan programs. The interest rate paid by borrowers is the greater of 9 percent or the weighted average of the constituent loans. The special allowance for Consolidation Loans is calculated using the same formula applied to Stafford loans.

Other Student Loan Programs. The credit market for student loans is not limited to the GSL programs. Guaranteed loans for graduate students in the health professions are available through the Health Education Assistance Loan (HEAL) program. The interest rate paid by the borrower under this program is determined quarterly, based on the average of the bond equivalent rates on 91-day Treasury bills auctioned the previous quarter, plus 3.0 percent. No subsidy in the form of a special allowance exists for these loans and interest accrues from the time of disbursement. However, repayment of the loan does not commence until the end of a grace period subsequent to completing full-time training.

Organizational Structure and Ownership

A 21-member board of directors governs Sallie Mae: 7 appointed by the President of the United Sates, 7 elected by educational institutions holding voting common stock, and 7 elected by financial institutions holding voting common stock. The President designates the chairman of the board from among the 21 members. No officers or employees of Sallie Mae serve on the board.

Ownership of Sallie Mae is vested in the holders of its voting and nonvoting common stock and preferred stock. Ownership of voting stock is held exclusively by educational and financial institutions eligible to participate in the GSL programs. As of December 31, 1990, Sallie Mae had outstanding, 4.3 million shares of preferred stock, 11.9 million shares of common voting stock, and 82.1 million shares of nonvoting common stock. The market value as of December 31, 1990, was $3.8 billion.

Although Sallie Mae is exempt from all state, local, and District of Columbia taxes, except for real property taxes, it is subject to federal income taxes. Interest on the debt obligations of Sallie Mae are also subject to federal income taxes, but are exempt from taxation by state, municipal, or local political subdivisions, subject to certain limitations.

Financing and Operating Services

Sallie Mae provides funds and loan liquidity to lenders of student loans through two distinct forms: the Warehousing Advance Program and Loan Purchase Program. Through the Warehousing Advance Program, Sallie Mae lends money to financial and educational institutions and to state agencies to enable the borrower to make or hold student loans and other education-related loans. Warehousing loans are fully secured by borrowers' pledges of federally insured assets, such as GSLs or Treasury or agency debt. Interest rates on these loans may be either fixed or variable: those bearing variable rates of interest vary with either the 91-day Treasury bill rate or the London Interbank Offer Rate (LIBOR). Under the Loan Purchase Program, Sallie Mae buys student loans from originators. Many lenders prefer to originate and hold loans when the student is in school and the loan is inexpensive to service (because no payments have to be collected from students) and to sell loans just before the student leaves school when servicing becomes more complex and expensive. Some lenders, however, find it advantageous to sell loans while the student is in school or after the loan is in repayment.

Together, warehousing advances and loan purchases provide lenders with financing throughout the life cycle of the GSL. Sallie Mae's holdings of warehousing advances and student loans, as of December 31, 1990, were $9.5 billion and $19.2 billion, respectively. These two categories of loans constitute 70 percent of Sallie Mae's total assets. Most remaining assets are in cash and short-term investments. As indicated in the note to Table 25, the principal short-term investment of the association is federal funds sold, or very short-term (usually one to three days) loans to highly rated commercial banks. Sallie Mae favors this investment for its high liquidity and yield. Other investments include U.S. Treasury securities and student loan revenue bonds. Some of these investments are held to hedge some of Sallie Mae's financing activities.

In addition to purchasing loans and making warehousing advances, Sallie Mae has the authority (provided by the 1986 amendments to the Higher Education Act) to buy, sell, insure, or underwrite obligations made to finance plant and equipment for institutions of higher education. Sallie Mae now offers secured financing to educational institutions for academic facilities. Sallie Mae also holds 75 percent of the outstanding voting common stock of the College Construction Loan Insurance Association (Connie Lee), a mixed-ownership, for-profit corporation chartered by the Congress in 1986 to insure and reinsure educational facilities obligations. In addition to purchasing $52.9 million in Connie Lee stock, Sallie Mae has agreed to purchase an additional $25.0 million to finance Connie Lee's reinsurance operations if these funds are needed. The commitment expires December 31, 1997, or when Connie Lee begins its direct insurance activities. Sallie Mae has also provided management services to Connie Lee and appoints three of the eleven directors to the board. Sallie Mae is not liable for the debts and obligations of Connie Lee.

TABLE 25. CONSOLIDATED SALLIE MAE BALANCE SHEETS AND INCOME STATEMENTS, 1981-1990 (In millions of dollars)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Balance Sheet										
Assets										
Student Loans Purchased	2,072	3,222	4,581	5,573	6,799	8,175	10,043	13,202	16,029	19,242
Warehousing Advances	2,755	3,191	3,285	4,230	5,481	6,527	8,357	7,989	8,601	9,528
All Other Assets[a]	345	1,094	1,252	1,817	2,171	3,530	4,463	7,437	10,858	12,354
Total	5,171	7,507	9,119	11,620	14,450	18,232	22,864	28,628	35,488	41,124
Liabilities										
Short-term Borrowings	419	1,343	352	2,437	3,000	4,517	6,571	9,820	14,965	14,801
Long-term Notes	4,600	5,950	8,050	8,108	10,195	12,424	14,672	16,964	18,623	24,243
All Other Liabilities	84	111	214	499	580	636	937	1,044	863	987
Total	5,104	7,403	8,616	11,044	13,775	17,577	22,179	27,827	34,451	40,030
Stockholders' Equity										
Common Stock										
Nonvoting	n.a.	n.a.	6	8	10	13	15	15	19	19
Voting	17	17	15	13	10	7	6	6	4	4
Preferred Stock	n.a.	n.a.	250	250	250	244	225	219	215	214
Additional Paid-in Capital	7	7	105	105	105	130	133	143	360	375
Retained Earnings	44	79	127	201	300	421	575	767	976	1,210
Less Treasury Stock	n.a.	n.a.	n.a.	n.a.	n.a.	-161	-270	-350	-537	-729
Total	68	103	503	577	676	655	684	801	1,038	1,093
Capital Ratios (Percent)										
Equity/Assets (Percent)	1.31	1.38	5.51	4.96	4.68	3.59	2.99	2.80	2.92	2.66
Income Statement										
Net Interest Income	50	90	146	194	235	262	313	373	418	479
Net Miscellaneous Income	1	2	3	4	3	2	n.a.	n.a.	n.a.	n.a.
Administrative Expenses	18	23	28	32	36	42	50	62	70	79
Pretax Income	33	69	121	166	202	222	262	310	348	400
Provision for Federal Income Taxes	15	31	54	67	78	78	81	85	90	99
Net Income (Loss)	18	38	67	99	123	145	181	225	258	301

SOURCE: Congressional Budget Office using data from Sallie Mae.

NOTE: n.a. = not applicable.

[a] Includes cash, federal funds sold, Treasury securities, and student loan revenue and facilities bonds. On December 31, 1990, federal funds--short-term loans to commercial banks--accounted for $7 billion, or more than 55 percent of "all other assets." Other investments and cash totaled $4.2 billion.

Guarantee agencies, lenders, and schools also use Sallie Mae's management systems and operational support services. In 1987, Sallie Mae began offering--for a fee--new and upgraded computerized management systems and operational support to lenders to improve the processing of student loans. To improve communications between guarantee agencies and lenders and reduce the process time for loan guarantees, Sallie Mae also offers an electronic communication system that provides guarantors with the ability to receive, process, and return loan guarantees to lenders in 24 hours.

The management and operational support that Sallie Mae offers to its clients benefits not only lenders but also Sallie Mae itself. The lender relies on these services to increase the efficiency of loan servicing operations, thereby reducing costs and increasing returns. In addition, the GSE's systems assure that the lender's servicing procedures are in compliance with federal regulations and with Sallie Mae's operating requirements. For Sallie Mae, use of these operating systems by the lender increases growth in its own assets and earnings. By offering its operational support services in conjunction with commitments to forward purchase (guarantees to purchase loans held by the lender) Sallie Mae not only assures the lender of a future market for student loans, but also generates future asset growth for itself. In 1989, almost 25 percent of Sallie Mae's purchase volume came from commitments to forward purchase with clients using Sallie Mae's operational support products and services.

Sallie Mae's Funding Sources

The way in which Sallie Mae obtains its funds has gone through almost a complete cycle since its inception. Originally, Sallie Mae secured its operating funds by borrowing from private sources. Sallie Mae also sold debt instruments with an explicit federal guarantee until June 1974, at which time Sallie Mae was required to begin obtaining funds primarily by issuing guaranteed debt obligations to the Federal Financing Bank (FFB). The Department of Education issued these obligations with the approval of the Treasury Department. In January 1982, after signing an agreement with the Treasury Department, Sallie Mae began borrowing exclusively in the private market without the use of an explicit federal guarantee. As of December 31, 1990, Sallie Mae's liabilities totaled $40.0 billion. This amount includes $14.8 billion in short-term borrowings, $24.2 billion in long-term notes, and $1.0 billion in other liabilities, principally accrued interest payable.

Secondary Market Structure and Competition

The secondary market now has numerous competitors for student loans. These include large commercial banks as well as state and private nonprofit agencies. Some of these institutions, such as the New England Education Loan Marketing Corporation and the Nebraska Higher Education Loan Program, deal exclusively with loan purchases, while other institutions both originate and purchase loans. Sallie Mae not only holds the largest share of all guaranteed student loans, but its share is much greater than that of any of its competitors; while Sallie Mae held 27 percent of all guaranteed loans outstanding as of September 30, 1989, Citibank, possessing the second largest guaranteed student loan portfolio, held only 4 percent.

Sallie Mae's dominance of the market stems largely from cost factors. Its management has aggressively controlled costs through such means as product specialization and economies of scale. In addition, the firm has been managed to the highest standards of commercial credit. Sallie Mae's internal financial strength, combined with the guarantee of its debt, has enabled the firm to borrow at near-Treasury interest rates. Through its advantages in operating economies and low funding costs, Sallie Mae is able to carry on its activities at a lower cost than its competitors.

CREDIT RISK

Sallie Mae's exposure to credit risk is small because most of its assets are either guaranteed by the federal government or fully collateralized by federally guaranteed claims. Unless a GSL has not been properly serviced, Sallie Mae has a direct claim for 100 percent of principal to the guarantee agencies and an indirect claim to the federal government. In the case of the Health Education Assistance Loan, Sallie Mae has a direct claim to the government. However, Sallie Mae could experience losses as a result of the insolvency of a guarantee agency, default on an insufficiently collateralized warehousing advance, or the bankruptcy of a firm with which Sallie Mae has financial agreements.[2]

Risk from Guarantee Agencies

Agencies that guarantee GSLs receive 100 percent reinsurance from the federal government so long as their annual default rates are less than 5 percent of their total guarantees. Agencies with default rates greater than 5 percent must pay from their own resources the difference between the insured amount due to the holder of the defaulted GSL and the amount recovered from the federal government (at least 10 percent of the amount due). These costs may eventually deplete the reserves of the guarantee agency and force the agency into default on its guarantee commitments.

One example of this risk involved the Higher Education Assistance Foundation (HEAF) case (see Box 11). In that instance, although the U.S. government had no legal obligation to do so, all GSL holders were fully protected from loss. If that case indicates current federal policy toward the liabilities of the guarantee agencies, then Sallie Mae's exposure to credit risk from this quarter is very small.

Risk from Warehousing Loans

Lending, or warehousing advances, are also subject to default losses, if the loans are not sufficiently collateralized. Sallie Mae is aware of this risk and has policies in place to require 100 percent (or more) of high-quality collateral to secure these advances. To date, Sallie Mae has not incurred any losses from defaults on warehousing advances.

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2. In addition to its interest rate exchange agreements (discussed in the next section), Sallie Mae has entered into currency exchange agreements to hedge the foreign exchange risk inherent in issues of Sallie Mae debt that are either denominated in foreign currencies or indexed to foreign currencies.

BOX 11
Federal Reimbursement of Guarantee Agencies: The HEAF Case

Guarantee agencies receive income from several sources including insurance premiums, collections on defaulted loans (the agency retains 30 percent of the amount collected), investment income, administrative cost allowances, and federal advances. The primary source of funds, however, is reinsurance payments from the federal government, accounting for 62 percent of all guarantee agency income in 1989. The rules for receiving federal reinsurance payments are as follows: In a given fiscal year, reinsurance is 100 percent of the loan amount until the agency has applied for default reimbursement on 5 percent of its total loan volume. At that point, the reimbursement rate drops to 90 percent of the loan amount. After 9 percent of the total loan portfolio has been presented for default claims, the reimbursement drops to 80 percent. This rule does not apply to new agencies, which receive 100 percent reimbursement. Guarantees can be transferred from old agencies to new ones so that 100 percent reimbursement can be obtained. Obviously, the financial difficulties of firms experiencing high default rates will be compounded by reduced reimbursement under these rules. Such was the case for the Higher Education Assistance Foundation (HEAF).

Until the summer of 1990, HEAF guaranteed one-third of all new student loans. Many, however, were loans with high default rates, disbursed to students at vocational and trade schools. An excessive number of defaults coupled with reduced reinsurance payments caused the agency to lose $11 million in 1989 and face possible bankruptcy by July 1990. In order to avoid financial collapse, HEAF sought to merge with the Nebraska Student Loan Program. This merger would have allowed HEAF to transfer its delinquent loans to a newer agency, which under reinsurance rules was still receiving 100 percent reimbursements on its loans. The Department of Education prohibited the merger, but assured lenders that the guarantees would be honored. Meanwhile, Sallie Mae lent HEAF $200 million on a fully collateralized basis to stay afloat until the new fiscal year began in October. At that time, HEAF would begin receiving 100 percent reimbursement until it reached the annual 5 percent default limit for full reimbursement.

In the final resolution, the department chose to spread HEAF's portfolio among the other guarantee agencies. Three plans had been offered: transferring HEAF's loans to the United Student Aid Fund (USAF), the other national guarantee agency; making Sallie Mae a guarantor and transferring the loans there; or distributing the loans among the guarantee agencies. Under the department's resolution, the risks associated with the loans were spread among several state agencies. Sallie Mae did not become a guarantor, but is managing the distribution of these loans through its subsidiary, Minnesota Guarantor Servicing Inc.

Risk from Exchange Agreements

To hedge against the adverse effects of changes in interest rates on income, Sallie Mae enters into interest rate exchange agreements under which it pays a floating interest rate in exchange for fixed interest rate payments (see detailed discussion in next section). If the party with which Sallie Mae exchanges interest payments defaults on its promise, Sallie Mae is subject to losses equal to the cost of replacing the agreement. Sallie Mae has employed various means of minimizing this risk, such as carefully screening and monitoring the credit quality of those with whom it enters such agreements. Sallie Mae has suffered only one loss of modest size ($300,000) on such a default.

INTEREST RATE RISK

In managing its funding activities, Sallie Mae has sought to minimize its exposure to interest rate risk. Interest rate risk occurs when the margin between interest income and interest expense is affected by changes in the level of interest rates. Interest income on most of Sallie Mae's assets tends to move with the open-market interest rates on Treasury securities to which they are indexed. For example, the rate of interest received by Sallie Mae on a Stafford loan is 3.25 percent above the average Treasury bill rate, adjusted every three months for changes in the average 91-day Treasury bill rate.

If Sallie Mae were to finance its variable-rate loans with fixed-rate debt, however, a fall in interest rates would reduce interest income but leave interest expense unchanged. In that case, Sallie Mae would suffer losses. To avoid this risk, Sallie Mae has matched the interest sensitivity of its debt with the interest sensitivity of its assets. On occasion, however, the GSE believes that it can minimize its long-term interest costs (and maximize its net interest income) by issuing fixed-rate debt. To avoid the risk inherent in this mismatch between assets and liabilities, Sallie Mae uses interest rate exchange contracts, or "swaps." Under these agreements, Sallie Mae pays a variable interest rate stream in exchange for a flow of payments sufficient to meet its fixed-rate obligations. With such a hedge in place, Sallie Mae's interest expense varies with its interest income, and a positive income spread is assured.

An analysis of Sallie Mae's asset/liability maturity gap indicates why its interest rate risk is small. Table 26 shows the dollar volume of the GSE's assets and liabilities with (swap-adjusted) maturities of three months or less, three to six months, and so on. If the maturity of every dollar of assets was matched exactly with a dollar of liabilities having the same maturity, the portfolio would be perfectly matched and the firm would have zero interest rate risk. As shown in Table 26, the asset/liability maturity gaps are a very small percentage of total assets.

TABLE 26. SALLIE MAE MATURITY GAP ANALYSIS
(In millions of dollars, year-end 1990)

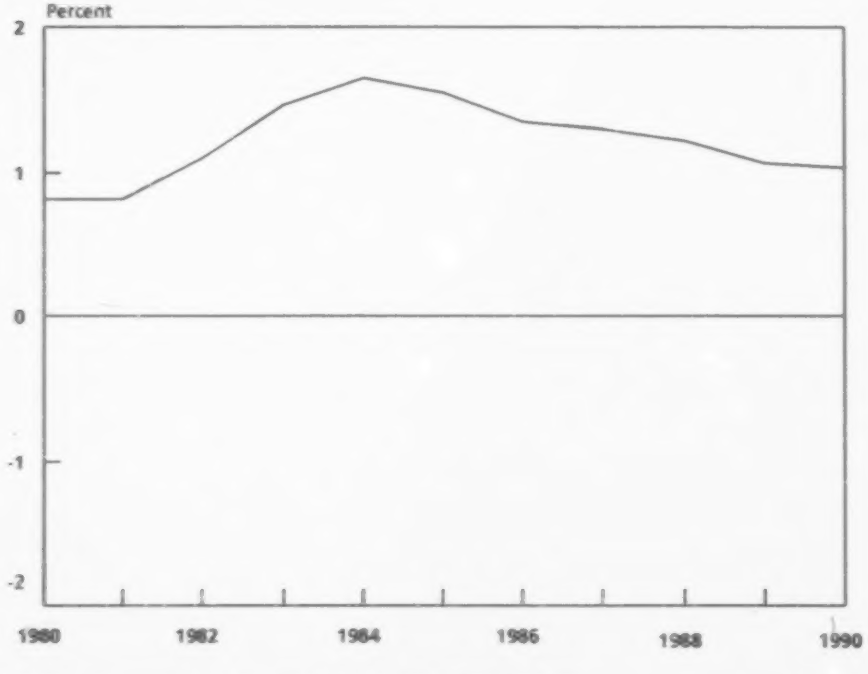
Maturity	Assets	Liabilities and Equity	Gap	Gap as a Percentage of Total Assets
3 months or less	35,147	35,365	-218	0.53
3 months to 6 months	2,272	2,194	78	0.19
6 months to 1 year	72	151	-79	0.19
1 to 2 years	607	496	111	0.27
2 to 5 years	1,265	884	381	0.93
Over 5 years	1,761	2,034	-273	0.66
Total	41,124	41,124	0	

SOURCE: Congressional Budget Office using data from Sallie Mae Information Statement, February 12, 1991.

EARNINGS HISTORY

The conclusions reached in the preceding pages about the low level of risk in the Sallie Mae portfolio are consistent with the observed stability of the firm's earnings. Since Sallie Mae began operating, it has consistently earned profits. Neither recession, nor sharp swings in interest rates, nor declines in real estate and commodity prices have had much effect on its earnings. The stability of earnings per dollar of assets, as shown in Figure 13, means that the principal determinant of Sallie Mae's earnings has been the book value of assets held by the firm. The major significance of this is that Sallie Mae's earnings have

Figure 13.
Pretax Income for Sallie Mae as a
Percentage of Average Total Assets

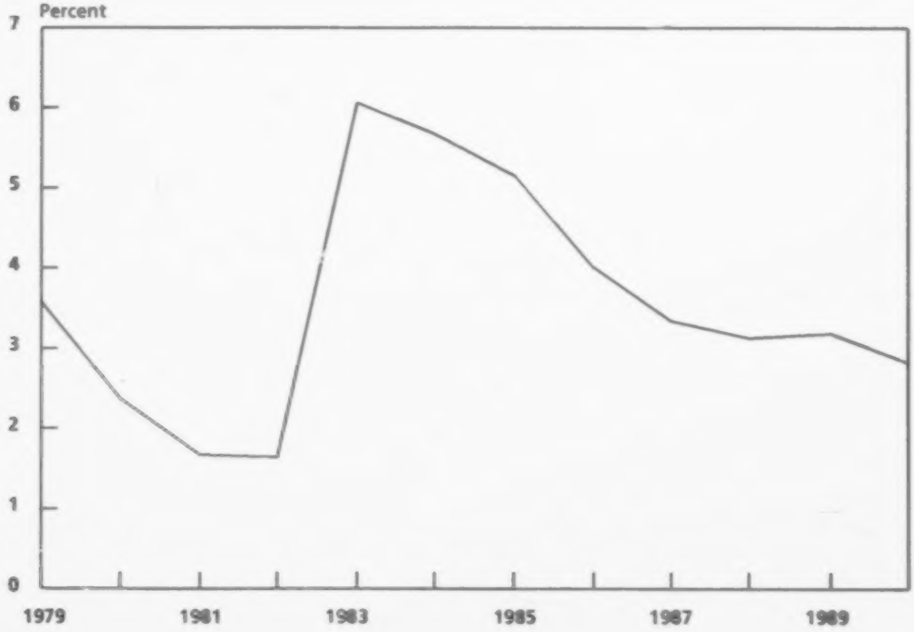


SOURCE: Congressional Budget Office using data from Sallie Mae.

not been heavily influenced by events external to the firm--market interest rates or recessions, for example.

Much of the 1983-1984 increase in Sallie Mae's pretax income per dollar of assets and subsequent 1986-1990 decrease evident in Figure 16 can be explained by the behavior of equity capital shown in Figure 14. In 1983, as Sallie Mae began to borrow in the credit markets without an explicit federal guarantee, Sallie Mae's management increased its equity capital nearly five times (from $103 million to $503 million). This increase was accomplished by an issue of preferred stock that produced a net inflow of $245 million, and an issue of nonvoting common stock that netted over $100 million. The increased use of

Figure 14.
Book Value of Sallie Mae's Capital as a Percentage of Average Total Assets



SOURCE: Congressional Budget Office using data from Sallie Mae.

equity funding of assets reduces interest expense and raises net income. Since 1986, Sallie Mae has been repurchasing its voting and nonvoting common stock on the open market. The effect of these stock buy-backs is to increase the proportion of Sallie Mae's assets that are financed by debt. These stock purchases, therefore, raise interest expense and reduce earnings per dollar of assets, but increase earnings per dollar of equity. Sallie Mae's stock repurchase plan is intended precisely to raise the rate of return on the book value for equity.

The relatively low level of risk Sallie Mae assumes is also corroborated by a statistical analysis carried out by CBO that indicates that at least 97 percent of the variation in quarterly pretax reported income for Sallie Mae can be explained solely by the change in the book value of its assets held for the quarter. This is a high percentage compared with the proportion of income that can be explained by such means for other GSEs and fully private intermediaries. Such a statistical result can be obtained for Sallie Mae only because it is such a low-risk firm. The implication is that factors external to Sallie Mae have a much smaller effect on its income than they do for most other firms. The financial markets also appear to have recognized the low risk of Sallie Mae's earnings. Sallie Mae stock at year-end 1989 was priced such that pretax earnings as a percentage of the market value of equity was approximately the pretax rate of return on riskless Treasury bills.

PROGRAM RISK

Some observers believe that the greatest threat to Sallie Mae's financial viability comes from the government itself. Sallie Mae is currently attuned to and depends on existing federal policy toward postsecondary education. That policy, of course, could be changed. If, for example, the GSL program were to be dropped in favor of a direct federal loan program for students, the change could adversely affect the financial outlook for Sallie Mae.

The existing stock of GSL contracts, however, assures Sallie Mae of opportunities to generate earnings for the next seven to ten years, even if the GSL program were to be terminated. During this transition, Sallie Mae would shrink in absolute size, but the firm's investors would not be exposed to loss from the downsizing of the firm. In fact, with a built-in transition period, Sallie Mae probably would be able to adapt its specialized financial knowledge and low-cost loan servicing operations sufficiently that it could continue to play a role in financing postsecondary education. For example, if the government establishes a federal direct loan program, Sallie Mae might be a successful bidder for loan servicing. If the federal direct loan program is targeted at low-income students, Sallie Mae might be able to develop a direct loan program for moderate- and higher-income students.

CAPITALIZATION

A firm's equity capital--or excess of asset value over liabilities--is its principal defense against unanticipated and uncontrollable losses that would otherwise destroy the firm's ability to meet its commitments to creditors and to continue as an ongoing entity. The extent to which a firm possesses equity capital, therefore, is a major factor in determining its safety and soundness from the point of view of creditors who are protected by the subordination of owners' claims to those of debt holders. From the federal government's point of view, equity capital is important because the implicit federal guarantee is widely understood not to include a guarantee of owners' claims. Accordingly, the greater the proportion of GSE assets that equity finances, the smaller the federal government's exposure to risk from GSE operations. The more risky the GSE, the greater the level of equity capital required to avoid an increase in federal risk.

Determining the appropriate level of capital for a GSE is not easy, however. Higher levels of capital reduce the government's potential liability, but also reduce the after-tax rate of return on equity. Interest payments to creditors are deductible from income before the calculation of federal income taxes. Dividend payments to equity holders are not deductible, however. At the limit, capital requirements could be raised to 100 percent so that Sallie Mae would have to finance each dollar of GSLs acquired with equity capital and the federal government's exposure to risk would be zero. Such a funding structure, however, would increase significantly Sallie Mae's federal tax liability and reduce returns to investors. Lower levels of required capital increase the rate of return to investors, but simultaneously increase risk to the government.

The federal government has allowed Sallie Mae to choose the appropriate capital level for the firm. Sallie Mae's book value of equity capital is now just below 3 percent of total assets. This capital ratio is less than half that of the low-risk Federal Home Loan Banks but greater than the corresponding ratio for any other GSE (when assets financed with mortgage-backed securities are included) except for the high-risk Farm Credit System. In its report on GSEs issued last May, the Treasury found that Sallie Mae's capitalization substantially exceeds the minimum risk-based capital requirements for insured commercial banks.[3] In addition, the major credit rating agencies regard Sallie Mae as being of strong credit quality, independent of the implicit federal guarantee of its debt.[4]

Financial stress tests, which are routinely used to assess the effect of adverse economic scenarios on firms, also indicate that Sallie Mae is adequately capitalized and would be able to maintain positive earnings through economic conditions that would threaten the existence of many other financial intermediaries. In one stress test performed by the Office of Management and Budget in which it was assumed that Sallie Mae's performing assets drop by 1.2 percent and the special allowance drops by 100 basis points (to 225), Sallie Mae's net income remains positive throughout the scenario.[5] Thus, Sallie Mae did not need to use any of its capital to weather this shock.

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[3] Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises* (May 1990), p. F-38.

[4] For example, "Moody's rates the senior debt of the Student Loan Marketing Association (Sallie Mae) Aaa. This rating reflects Sallie Mae's impressive management and strong financial fundamentals." *Moody's Bank Credit Report: Student Loan Marketing Association* (October 1989), p. 1. CBO interprets this statement as indicating that Moody's would give Sallie Mae a triple-A rating even if it were not a GSE.

[5] Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1992* (February 1991), p. 237.

CURRENT FEDERAL OVERSIGHT OF SALLIE MAE

Although no single federal agency has specific regulatory responsibility for Sallie Mae's safety and soundness, the GSE is subject to operating restrictions and oversight. The most important is probably periodic Congressional oversight. Congressional review of Sallie Mae's operations exercises an important influence on management, and on occasion leads to mandated restrictions, such as the statutory prohibition enacted in 1986 on the GSE's ownership of a bank, savings and loan, savings bank, or credit union. Sallie Mae is also required to report annually the results of an independent audit of its accounts to the Secretary of the Treasury.

The Secretary of the Treasury also has statutory authority to examine all financial records of the association. The Secretary is required to report annually to the President and to the Congress on the financial condition of Sallie Mae including ". . . assets and liabilities, capital and surplus, or deficit; a statement of surplus or deficit analysis; a statement of income and expense; a statement of sources and applications of funds; and such comments and information as may be deemed necessary to keep the President and the Congress informed of the operations and financial condition of the Association, together with such recommendations with respect thereto as the Secretary may deem advisable . . . ." In the past, the Secretary has fulfilled this requirement by sending copies of Sallie Mae's annual reports to the Congress.

OPTIONS FOR LIMITING FUTURE FEDERAL EXPOSURE TO RISK

The Congress could limit the government's future exposure to risk from Sallie Mae's operations in a variety of ways. Options include achieving genuine privatization of the GSE, improving the financial "early warning" system by directing the Treasury Department to use its current authority to monitor the enterprise's activities more closely and to recommend Presidential action to forestall increases in risk, requiring greater use of private risk assessment of the GSE, or subjecting it to a new federal regulator created to supervise the safety and soundness of all GSEs.

Each of these strategies has some appeal, but little urgency, in the case of Sallie Mae. Over five years ago, CBO outlined the advantages of these approaches to controlling federal risk, including full privatization of Sallie Mae.[6] Since then, the privatization option has been discussed in various policy forums, but no action has been taken.[7] Similarly, increased monitoring and regulation of Sallie Mae has been suggested by the U.S. General Accounting Office.[8]

The lack of urgency in the case of Sallie Mae stems from the fact that the firm--without a safety and soundness regulator--has conducted its business in such a way as to have limited the federal exposure to risk to an insignificant level. Sallie Mae has carefully controlled its risks and maintained a level of capital that seems to have been appropriate. A well-informed and motivated regulator would have required exactly this type of behavior.

A question relevant to policy is why unregulated management has followed a low-risk strategy for the firm. Sallie Mae's management has indicated that a riskier business strategy has never had any appeal to the association's board of directors. From the beginning of the association, the board has directed management to structure the firm's operations in such a way that its growth in earnings would be steady and predictable. The association's objectives have always been inconsistent with a risky strategy. Another factor may have been that, given its specialization in the GSL market, Sallie Mae's gross interest income was fixed as a spread over the Treasury bill rate. This created an incentive for Sallie Mae to keep its interest expense as close to the Treasury bill rate as possible, to maximize net interest income. One means of doing so was to operate with as little risk as possible. Sallie Mae also had strong incentives to minimize servicing costs because such savings largely accrue to the firm.

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[6] Congressional Budget Office, *Government-Sponsored Enterprises and Their Implicit Federal Subsidy: The Case of Sallie Mae* (December 1985), pp. 40-44.

[7] Susan Woodward, "Privatizing Financial Intermediaries: OPIC, Fannie Mae, and Sallie Mae" (unpublished paper). The author describes the privatization discussions in which she participated while on the staff of the Council of Economic Advisers, Executive Office of the President.

[8] General Accounting Office, *Government-Sponsored Enterprises: The Government's Exposure to Risks*, GAO/GGD-90-97 (August 1990), p. 4.

Privatize Sallie Mae

One of the major difficulties to be overcome by attempts at privatization is that the severing of all federal responsibilities for the GSE's debt must be credible. This requirement is made all the more difficult because the current federal guarantee of Sallie Mae's debt is not explicit. One approach to a credible renunciation of the implicit guarantee is to make it explicit. Under this approach, the federal government would explicitly guarantee the timely payment of interest and principal for all outstanding securities issued by Sallie Mae before the effective date. This guarantee should be extended by statute. When the guarantee is made explicit, a schedule should also be announced for its withdrawal; one option would be to guarantee existing issues to their maturity or for three years, whichever is less.

One shortcoming of this plan is that it would leave the Student Loan Marketing Association as the issuer of more than $40 billion in outstanding debt. Given the power of the notion of an institution's being too big to fail, the markets might continue to perceive Sallie Mae debt as implicitly guaranteed by the federal government, despite the expiration of the explicit guarantee.

This shortcoming suggests that the effective privatization of Sallie Mae would require dividing the firm into several independent entities. Specifically, Sallie Mae could be required to divest itself gradually of its component operations, assets, and liabilities by distributing to its current common and preferred shareholders, shares in each of several, new, fully private, independent firms created from Sallie Mae. The new entities would have none of the links to the federal government that normally distinguish GSEs, such as a line of credit at the Treasury or exemption from the Securities and Exchange Commission's registration requirements or state laws that protect investors. They would also be subject to the antitrust laws.

By creating several new and correspondingly smaller entities, markets might be persuaded that the federal government would not intervene to protect creditors from loss in the event of insolvency by one of these firms. This result requires that none of the surviving entities be too big to fail. In addition, this approach could significantly increase competition in the secondary market for GSLs and assure the continued access of primary lenders to the capital markets.

A significant difficulty presented by this approach would be the need to determine efficient divisions of Sallie Mae. One approach would be to try to divide the firm by function; another would be to try to create a number of mini-Sallie Maes. Some economies of scale are also likely to be lost, however, even if an otherwise desirable restructuring of Sallie Mae can be identified.

As the components of Sallie Mae are spun off to form new, fully private firms, the market value of its stock would fall with the reduced earnings of the shrinking firm. These declines would be fully offset for stockholders by the value of the new stock distributions--provided that the value of the whole is the sum of the parts. The spin-off process could continue until the transformation was complete and Sallie Mae disappeared as a distinct entity. Alternatively, the process could be terminated somewhat short of complete dissolution if the government wished to maintain a standby presence in the secondary market for student loans. In this case, however, the government might wish to purchase the residual elements of the firm, and operate it directly as a fully owned federal entity. Such an arrangement would eliminate the neither-fish-nor-fowl ambiguity inherent in the GSE structure.

If genuine privatization were achieved in this manner, the primary student loan market would benefit from increased competition, Sallie Mae shareholders would gain from the removal of the operating restrictions imposed by Sallie Mae's charter, and taxpayers would gain from the elimination of their implicit, contingent liability for Sallie Mae's debt. It is not clear, however, that the gains to these three types of beneficiaries would be sufficient to offset the substantial legal and administrative costs that such a restructuring would entail.

Increase Treasury Department Oversight and Early Warning

A second option would be to require the Department of the Treasury, under existing authority, to examine Sallie Mae's five-year strategic plan and annual budget and business plan. This action could enable

Treasury to anticipate changes in planned risk at Sallie Mae and to alert the President and the Congress in time to block them, if desired. The President could be given authority to remove Sallie Mae's board of directors at the recommendation of the Secretary of the Treasury, if the Secretary found that the GSE was increasing its risk significantly.

This approach requires the Treasury to take a greater role in monitoring Sallie Mae's risk than it has assumed to date. No amount of monitoring can assure that the government will detect an increase in the riskiness of Sallie Mae. For example, changes in the structure of the GSL program may force Sallie Mae into unplanned departures from its long-term business plan. Also, management may take steps to increase risk that were not contemplated in advance, although it has substantial incentives not to do so. If Treasury must rely on monitoring business plans to detect greater risk taking, that recognition of risk may come too late to prevent an increase in risk by Sallie Mae. At that point the Secretary could recommend removal of the board.

A shortcoming of this approach is that the Treasury Secretary and the President might be reluctant to remove the board of a GSE, especially if increased risk taking had not led to losses. A supervisory agency with a statutory mandate to assure the safe and sound operation of Sallie Mae and with sufficient enforcement powers would probably be less reluctant to act to stop a large increase in risk.

Require Private Risk Assessment

Sallie Mae could also be required to make itself more susceptible to private risk assessment. For example, as discussed in Chapter II, the GSE could be required to issue subordinated debt that subjected investors to some risk of loss. Depending on how the debt was structured, the debt would be worthless, would convert to equity, or would not pay interest, under specified conditions that indicated a deterioration in Sallie Mae's financial condition. Changes in the credit ratings or market prices of such instruments could be used as an early warning signal of changes in Sallie Mae's earnings prospects and the government's exposure to risk.

One could argue, however, that Sallie Mae common stock is both unguaranteed and priced to reflect Sallie Mae's earnings prospects. The stock price, according to this view, already contains nearly as much information as could be obtained from pricing subordinated debt and bonds whose interest was contingent on Sallie Mae's earnings.

Subject Sallie Mae to a Centralized Supervisor of All GSEs

As discussed in Chapter II, one approach to reforming regulation of GSEs would be to create a new agency with responsibility for supervising the safe and sound operation of all the enterprises. The agency would have statutory authority to examine Sallie Mae, impose a risk-based capital requirement on the GSE, enforce that capital standard and other limits on risk taking, take action if Sallie Mae became insolvent or close to insolvency, and assess Sallie Mae for the cost of supervisory activities.

Effective supervision requires a detailed knowledge of the operations of the regulated entity. A centralized GSE regulator would have to become quite knowledgeable about Sallie Mae's affairs. Achieving this expertise could be costly for both Sallie Mae and the supervisory agency. A poorly informed supervisory agency, however, might set a capital requirement that did not take into account Sallie Mae's true exposure to risk and thereby impose unnecessary costs on Sallie Mae shareholders, as well as lenders, students, and postsecondary education institutions. Because SLMA poses so little risk to the government today and has strong incentives to continue to operate in a low-risk manner, there are no guarantees that the potential benefits from effective supervision--prevention of greater risk taking by the GSE--are worth the potential costs associated with poorly informed supervision.

The high information needs and costs essential to effective, controlling regulation could be substantially reduced in either of two ways, as discussed in Chapter II. First, the Congress could direct the supervisory agency to streamline monitoring and supervision of Sallie Mae as long as the GSE posed little risk to the government. A streamlined regulatory process would minimize the explicit and implicit cost of more intensive monitoring. Alternatively, Sallie Mae could reach a "safe harbor" from regulatory interference by obtaining a triple-A rating, irrespective of the implicit federal guarantee of its obligations, from two private rating agencies. The GSE probably could obtain such a rating at very little cost to stockholders. If Sallie Mae achieved and maintained the rating, the supervisory agency would be able to monitor Sallie Mae, but could not require any changes in its operations. However, if the enterprise fell out of compliance with the standard, it would be required to submit a business plan to the supervisory agency that would enable it to comply within one year. If Sallie Mae failed to comply within that period, the agency could use enforcement powers to impose a business plan on it.

Both approaches appear to be feasible and to offer protection against supervisory failure that would impose excessive costs on Sallie Mae. As discussed in Chapter II, one shortcoming of allowing the GSE to reach a regulatory "safe harbor" is that changes in credit ratings can lag changes in a financial institution's condition and risk exposure. It is unlikely, however, that Sallie Mae's financial condition could deteriorate significantly in a short period of time. Also, the requirement that the GSE maintain a very high rating would provide significant protection for the government.

APPENDIXES

APPENDIX A

ASSUMPTIONS USED IN THE SCENARIO ANALYSIS OF THE CAPITAL ADEQUACY OF THE FARM CREDIT SYSTEM

The objective of the scenario analysis conducted by CBO was to examine how the Farm Credit System (FCS) might fare under conditions similar to those experienced during the 1984-1990 period. These years were the most difficult for the FCS since the Great Depression, and a repeat of them would represent something like a worst-case scenario for the system. It was not possible, nor did it appear reasonable, to try to duplicate this experience exactly. The institutional structure of the system and the financial condition of its borrowers are significantly different in 1991 from what they were in 1984.

ASSUMPTIONS ABOUT THE BALANCE SHEET

The scenario developed by CBO assumes that credit risk is the most important threat to the financial condition of the FCS. This is expressed initially in a deterioration of the system's balance sheet. Specifically, the scenario attempts to test the vulnerability of the system to a significant decline in loan volume and quality. Each district within the FCS is analyzed individually.

With respect to accruing loans, the scenario assumes that the volume of accruing loans during the 1991-1996 period follows a pattern similar to that experienced during the 1984-1990 period. In addition, it assumes that the ratio of nonaccruing loans to accruing loans during the 1984-1990 period is repeated in the 1991-1996 period. The implicit assumption underlying the scenario is that, in response to hard financial times, farmers will borrow less and be less capable of servicing existing debt.

The level of "other nonearning assets" during the projection period is defined in relation to accruing loans during the historical period. For instance, if other nonearning assets were equal to 3 percent of accruing loans in 1984, it was assumed that a similar relationship would prevail in 1991.

For "investments and cash," the levels in the projection period are based on a modified version of the historical trend. One of the responses of the system to the declining quality of its portfolio in the mid-1980s was to increase significantly the level of cash and investments. Cash and investments have not returned to pre-1984 levels in most districts, which accounts for the dramatic decline in cash and investments between 1990 and 1991. This decline, which CBO does not expect to occur, contributes to the substantial drop in total FCS assets between 1990 and 1991. It was deemed improbable that the system, if facing another downturn in the farm economy starting in 1991, would increase its cash and investments to the same extent that it did in 1984 and 1985. Accordingly, for the projection period, the rate of change experienced by each district was reduced. Interest is assumed to be earned on cash and investments at the rate projected by CBO for three-month Treasury bills.

It was assumed that 20 percent of the existing loan loss reserves would be used each year to resolve problem loans. The level of loan loss reserves in any given year during the projection period is, therefore, assumed to be equal to the previous year's level of reserves less 20 percent, plus any additions or subtractions made in the current year.

With respect to liabilities, it was assumed that protected stock would decline by 20 percent per year as this source of equity is retired and not replaced. Minimum capital standards are assumed to be 7 percent of total assets. This overstates the actual amount of capital that would be required to satisfy the capital standards, especially at the Banks for Cooperatives, since not all FCS assets have a 100 percent risk-weight. If capital is greater than 7 percent of total assets, at-risk stock is assumed to change at the same percentage rate as gross loan volume during the projection period. If capital levels fall below 7 percent, at-risk stock is not redeemed by the system. Retained earnings during the projection period are equal to retained earnings in the previous period plus net income. Finally, system liabilities expand or contract to ensure that the two sides of the balance sheet are equal.

ASSUMPTIONS ABOUT THE INCOME STATEMENT

While the initial effect of the downturn in the farm economy is reflected in the balance sheet of the FCS, it is soon transmitted to the income statement. The primary means of transferral come in the operating costs of the various districts and in the provisions for loan losses that must be made. Operating costs are assumed to increase at a rate slightly below that experienced in the 1980s, since some of the institutional capacity and expertise for dealing with increases in nonaccruing loans still exists within the system. Loan loss provisions are linked to the level of nonaccruing loans. The relationship between nonaccruing loans and loan loss provisions that occurred during the 1980s is assumed to recur in the projection period.

The system is assumed to be better able to maintain interest margins in the 1991-1996 period than it was during the 1984-1990 period, for two fundamental reasons. First, as noted in Chapter III, the system formerly used average-cost pricing for its loans. During the 1980s, when interest rates were falling, average-cost pricing meant that other lenders were able to offer much more attractive rates to borrowers. As a result, many of the more financially viable borrowers served by the FCS were able to leave the system by refinancing their debt with other lenders. The recent shift to marginal cost pricing is assumed to eliminate the pricing advantage previously enjoyed by the FCS's competitors. As a result, there are fewer competitive pressures to reduce interest margins.

The second factor justifying the assumption that interest margins are maintained during the post-1991 period is that the system has made important improvements in its ability to manage interest rate risk. There are fewer gross mismatches in the maturities of loans and securities, and more sophisticated mechanisms are in place for identifying and coping with gaps that develop. Accordingly, the district banks are assumed to price their loans at 2 percent above their cost of funds, and this margin does not fall as the level of nonaccruing loans increases.

Noninterest income in each district during the projection period is defined as a proportion of interest income. The proportion is equal to the percentage prevailing during the historical period.

Insurance premiums are calculated as stipulated in the 1987 act: 0.0015 times the volume of accruing loans plus 0.0025 times the volume of nonaccruing loans. The volume of both loan categories is assumed to be measured at the end of each calendar year.

APPENDIX B

INTERNAL CAPITAL STANDARDS AND CAPITAL ADEQUACY OF FANNIE MAE AND FREDDIE MAC

This appendix discusses the internal capital standards of Fannie Mae and Freddie Mac and the recent analysis of their capital adequacy by the Office of Management and Budget.

FANNIE MAE'S CAPITAL STANDARD

Fannie Mae's internal capital standard has separate components for the credit risk of mortgages held in portfolio and financed with mortgage-backed securities (MBSs), the interest rate risk of the mortgages in the GSE's portfolio, and the credit risk and interest rate risk of all other assets in the portfolio. Each of these components is examined below.

Mortgage Credit Risk

The component for mortgage credit risk in Fannie Mae's standard requires the GSE to hold enough capital to absorb the losses associated with certain lifetime default rates on the mortgages it has financed. The default rates that the standard assumes are based on an analysis of the performance of conventional 30-year, single-family, fixed-rate mortgages (FRMs) originated in Texas in 1981 and 1982 that Fannie Mae purchased and for which it has detail on individual loans. The GSE used information on the incidence and timing of actual defaults on the mortgages through the third quarter of 1989 to project their lifetime default rates. These estimated rates range from 0.8 percent for loans with a loan-to-value (LTV) ratio at origination of no more than 60 percent, to 10.0 percent for mortgages with an initial LTV ratio of 75 percent to 80 percent, to 28.0 percent for loans with an initial LTV ratio of more than 90 percent.[1]

Fannie Mae's capital standard assumes default rates equal to the projected experience on the 1981-1982 Texas loans for all 30-year, single-family, owner-occupied mortgages that are unseasoned (less than five years old) and on which it does not have recourse to lenders or to the Federal Housing Administration (FHA) or the Department of Veterans Affairs (VA). The standard assumes lower default rates for unseasoned, nonrecourse FRMs of intermediate maturities, and higher rates for unseasoned, nonrecourse adjustable-rate mortgages (ARMs) and multifamily loans. For all types of seasoned mortgages, the assumed default rates are half as large as they are for unseasoned loans.[2]

To determine how much capital it must hold in order to absorb the losses associated with the default rates assumed for different types of nonrecourse loans, Fannie Mae simulates the lifetime cash flows from the mortgages. The simulations assume that the loans will default at the rates assumed by the capital standard, that the timing of defaults is consistent with the experience of the 1981-1982 Texas loans studied by Fannie Mae, and that the GSE finances the loans with MBSs. The cash flows include projected default costs, income from guarantee fees, float income (interest earned from the short-term investment of payments from borrowers), earnings on capital, administrative expenses, federal income taxes, and dividends. Projected default costs include interest paid while the loans are in foreclosure, expenses related to foreclosing on the mortgages and disposing of the properties, and, most important, the difference between the unpaid loan balances and the prices for which the houses are sold. Fannie Mae assumes levels of de-

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1. By way of comparison, Standard & Poor's (S&P) assumes that a "prime" pool of mortgages with initial LTV ratios of 80 percent would have a 10 percent default rate in a "double A" depression. S&P assumes that a prime pool of loans with initial LTV ratios of 95 percent that were covered by private mortgage insurance would have a 30 percent default rate. A prime pool consists of 300 or more 30-year, single-family FRMs, for which the properties are owner-occupied, detached homes and well diversified geographically in areas with strong economies, and the initial balances of the loans were less than $300,000. See Standard & Poor's Corporation, *S&P's Structured Finance Criteria* (New York: 1988), pp. 82-83.

2. For more detail on the projected lifetime default rates by initial LTV ratio of the 1981-1982 Texas loans studied by Fannie Mae, as well as the adjustments in these rates that the GSE's capital standard makes for differences in mortgage type and seasoning, see Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises* (May 1990), pp. A-38 to A-39.

fault costs based on its experience. The simulations calculate the initial capital investment required to absorb all the projected default costs and maintain a positive capital balance in each year over the life of the mortgages.

Credit Risk on Nonrecourse Mortgages. Fannie Mae's internal capital standard assumes a weighted average default rate of 8.9 percent on the unseasoned, nonrecourse, single-family, owner-occupied, 30-year FRMs financed by the GSE at year-end 1990. The GSE estimates that an initial capital investment of 0.8 percent (80 basis points) of outstanding principal is required to cover the projected losses on those loans. For all the nonrecourse mortgages financed by the GSE, the assumed weighted average default rate is 8.2 percent, and the required initial capital investment is 0.74 percent (74 basis points) of outstanding principal. The latter equates to an overall leverage ratio for the credit risk of nonrecourse mortgages of 135-to-1. The assumed default rates and required leverage ratio are the same as the capital standard required at the end of 1989. If the initial LTV ratio, product type, or seasoning of Fannie Mae's nonrecourse mortgages changed significantly in the future, the assumed default rates and the leverage ratio required by its capital standard would also change.

In 1990, at the request of the Department of the Treasury, Fannie Mae analyzed how changes in the three major assumptions employed in its simulations would affect the initial capital investment that its capital standard would require to cover the projected lifetime default losses on the unseasoned, nonrecourse, single-family, owner-occupied, 30-year FRMs it had financed at year-end 1990. First, the sales price of foreclosed properties, which Fannie Mae had assumed to be 72 percent of the unpaid principal balance, was varied from 64 percent to 72 percent, to reflect more closely the enterprise's recent experience. Second, the average lifetime default rate was varied from 8.25 percent to 9.5 percent. The latter rate more closely tracks Fannie Mae's experience in 1982 and 1983, which were the peak default years for conventional loans originated in Texas in the 1980s and purchased by the enterprise. Third, the projected lifetime default rate for loans with lower LTV ratios at origination was varied from 5 percent to 10 percent.[3] Based on the sensitivity analyses, the Treasury concluded that the initial capital investment required to cover the losses on newly originated, nonrecourse, single-family, owner-occupied, 30-year FRMs financed by Fannie Mae could be up to 55 percent higher than estimated by the GSE.[4]

Credit Risk on Recourse Mortgages. Fannie Mae's internal capital standard requires the GSE to hold capital equal to 0.4 percent (40 basis points) of the unpaid principal balance of mortgages that are covered by recourse agreements, backed by collateral, insured by the FHA, or guaranteed by the VA. According to Fannie Mae, this amount far exceeds the level of capital necessary to absorb losses on the recourse loans if they experienced default rates equal to the projected lifetime default rates on the 1981-1982 Texas loans studied by the enterprise. This initial capital investment equates to a 250-to-1 leverage ratio for the credit risk on nonrecourse loans.

Interest Rate Risk of Mortgages

Fannie Mae's standard requires that it hold capital equal to the greater of 2 percent of the unpaid principal balance of the mortgages it holds in portfolio, or the amount necessary to pass a stress test in which rates rise by 6 percentage points within one year and remain at that level for four years. As discussed in Chapter IV, Fannie Mae projects that it would earn over $1 billion in net income in each of the five years of this interest rate stress test if rates had risen starting at year-end 1990. Thus, the GSE's capital standard currently requires it to hold capital equal to 2 percent of the mortgages it holds in portfolio.

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[3] Standard & Poor's is willing to give a single-A rating to private-label, mortgage-backed securities collateralized by a pool of mortgages with initial LTV ratios of 80 percent or less if an 8 percent default rate on the loans in the pool would not cause the MBSs to default. See Standard and Poor's Corporation, *S&P's Structured Finance Criteria*, p. 84.

[4] See Department of the Treasury, *Report on the Secretary of the Treasury on Government Sponsored Enterprises*, pp. A-75 to A-79. In CBO's view, the first two sensitivity analyses were reasonable. The third was more questionable, since the experience of Fannie Mae and Freddie Mac suggests that loans with lower LTV ratios perform significantly better than Standard & Poor's assumes.

Risks of Other Portfolio Assets

Fannie Mae's standard requires it to hold capital equal to 2 percent of the book value of nonmortgage assets held in its portfolio, to cover the credit and interest rate risk of those assets. Management believes that the risks posed by these assets--which consist principally of short-term investments, cash and cash equivalents, and receivables from currency swaps (contracts under which the GSE receives payments in foreign currencies)--are small.

FREDDIE MAC'S CAPITAL STANDARD

Freddie Mac's capital standard requires the GSE to have enough capital to remain solvent on a GAAP basis during a simulated Great Depression scenario. In the 10-year scenario, home prices nationwide are assumed to be flat in the first year, to fall by 10 percent annually in years 2 through 5, to be flat in the sixth year, and then to rise slowly in years 7 through 10. Short-term interest rates and mortgage rates are assumed to decline by 5 percentage points by year 5, and then to rise by 2 percentage points in the remaining five years.[5]

The stress test assumes that Freddie Mac would pay no dividends and purchase no mortgages during the Great Depression scenario. The first assumption clearly is not conservative, since neither the severity of the downturn nor the losses that the GSE would experience would be evident in the initial years of the 10-year period. The impact of the second assumption is not as clear-cut. On the one hand, a more realistic assumption is that Freddie Mac would continue to purchase mortgages in the first few years. Many of these loans would experience high default losses. On the other hand, the assumption means that the GSE does not purchase loans taken out to refinance mortgages with low mark-to-market LTV ratios. In this respect, the assumption

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5. The Great Depression scenario is outlined in Moody's Investors Service, *Annual Industry Outlook: Private Mortgage Insurance* (New York: May 1986), Appendix I. Moody's now rates private mortgage insurers and private-label MBSs by assessing how they would perform over a large number of randomly generated economic scenarios, rather than during a stylized Great Depression. See Moody's Investors Service, *Moody's Approach to Rating Residential Mortgage Pass-Throughs* (New York: April 1990), pp. 7-10.

worsens the enterprise's average default experience during the scenario.

Freddie Mac suffers losses in this stress test for three reasons. First, declining home prices cause the GSE to experience high mortgage default rates. As prices fall, the estimated mark-to-market LTV ratios of its mortgages decline. Freddie Mac uses statistical models that relate the probability of loan default to the estimated mark-to-market LTV ratio to project the proportion of mortgages that default in each year of the scenario. To perform the analysis each year, the GSE updates its estimate of the mark-to-market LTV ratios of the loans it had financed at year-end. Second, declining interest rates accelerate loan prepayments and lower the income available to pay default claims after the first few years. Freddie Mac uses statistical models that relate the probability of loan prepayment to the spread between current mortgage rates and the interest rates on the mortgages it has financed.[6] Third, lower interest rates mean lower float income. The enterprise calculates float income based on the short-term interest rates assumed in the scenario.

To assess how the defaults, prepayments, and reduced float income would affect its income and capital position, Freddie Mac projects pro forma income statements and balance sheets during the scenario. The losses from mortgage defaults reflect assumptions based on the GSE's experience about the time between default and foreclosure, the amount of time before a foreclosed property is sold, and the costs of disposing of it. The amount of time that each private mortgage insurer is assumed to remain in business, and be able to pay claims owed to Freddie Mac, is based on its credit rating. For example, firms rated double-A are assumed to last seven years, while firms rated single-A are assumed to last five years. Lenders with which the GSE has recourse agreements are assumed to default on their obligations to absorb a portion of default losses.

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[6] For assessments of Freddie Mac's default and prepayment models, see Price Waterhouse, *Report on Assessment of Freddie Mac's Capital Adequacy* (Washington, D.C.: February 5, 1990), pp. V-2 to V-7; and Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises*, pp. B-90 to B-91.

In 1990, at the request of the Department of the Treasury, Freddie Mac analyzed how changes in the major assumptions employed in its Great Depression stress test would change the amount of capital required for the GSE to last the full 10 years. The Treasury asked Freddie Mac to test the sensitivity of the results of the analysis to changes in home price appreciation before the start of the downturn, transactions costs, the proportion of default losses that are recovered on loans covered by primary mortgage insurance, the time required to sell foreclosed properties, prepayment rates, and default rates. The analyses assumed that the downturn began at the end of 1989. If home prices were assumed to increase 2 percent less in each year before the start of the Great Depression scenario, Freddie Mac would have required about 38 percent more capital initially to last the full 10 years. The results were much less sensitive to changes in the other assumptions.[7]

Freddie Mac recently improved some of the assumptions of the model that it uses in its Great Depression stress test. The GSE changed the price index used to estimate the mark-to-market LTV ratios of multifamily mortgages to make it more conservative, and updated the credit ratings of private mortgage insurers. Freddie Mac also corrected the model to reflect the fact that the scenario's low interest rates would allow it to save interest costs by calling some debt. As discussed in Chapter IV, with these improvements Freddie Mac is projected to last somewhat longer in the Great Depression scenario assumed to begin at year-end 1989 or 1990.

OMB'S ANALYSIS OF CAPITAL ADEQUACY

In late 1990, the Office of Management and Budget (OMB) analyzed the capital adequacy of Fannie Mae and Freddie Mac using a stress test that is very similar to the Great Depression scenario on which Freddie Mac bases its internal capital standard. As discussed in Chapter IV, OMB projected that both GSEs would survive the full 10 years of the scenario. OMB's stress test differed from Freddie Mac's in several respects, however.

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[7] See Department of the Treasury, *Report of the Secretary of the Treasury on Government Sponsored Enterprises*, pp. B-91 to B-92.

The most important difference is that OMB simulated the performance of Fannie Mae and Freddie Mac over 20 years, rather than 10. For the first decade of the 20-year period, OMB assumed that annual appreciation in home prices would average 4 percent nationwide, consistent with expected general price inflation, and that mortgage rates would be stable at 10 percent. The assumption of steady appreciation in home prices is not conservative, since it causes the estimated mark-to-market LTV ratios of the mortgages financed by each enterprise to decline significantly before the depression hits. Each GSE was assumed to grow by purchasing mortgages with the same distribution of LTV ratios as the loans it purchased in 1990. The proportion of each enterprise's assets financed with debt and MBSs was projected to remain roughly the same. Dividend payments were increased to maintain capital as a proportion of all assets and MBSs at year-end 1990 levels. The 10-year deflationary period was assumed to begin in the year 2000.

OMB assumed that Fannie Mae and Freddie Mac would purchase enough new mortgages in the depression to replace loans that were paid off or defaulted. This is a conservative assumption, since many of the newly purchased loans quickly default in the scenario. The analysis did not assume that the GSEs would raise MBS guarantee fees on this new business. OMB's simulations focused solely on single-family loans. They did not consider either GSE's multifamily mortgage programs.

OMB used statistical models of defaults based on FHA-insured mortgages, and then adjusted the models somewhat to fit each GSE's actual default experience in 1988 and 1989. This procedure was reasonable for Freddie Mac, since the enterprise's default experience on single-family loans has been relatively consistent over time. It was very conservative for Fannie Mae, since a very large portion of the GSE's defaults in 1988 and 1989 were from loans originated before 1985. As argued in the credit risk section of Chapter IV, the credit risk of the single-family loans financed by the two enterprises at year-end 1990 is quite similar, because about 90 percent of the loans financed by each were originated after their underwriting guidelines became virtually identical in 1985. The average initial LTV ratios of the loans bought by each enterprise since 1985 are also very similar.

In February 1991, OMB corrected some errors in its model and repeated the analysis of each GSE's capital adequacy, assuming that the depression would begin at the start of 1992. OMB again projected that both Fannie Mae and Freddie Mac would survive the full 10 years of the downturn.

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